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AMD Ryzen 7 PRO 6850U testing with a LENOVO 21CM0001US (R22ET46W 1.16 BIOS) and AMD Rembrandt 1GB on Ubuntu 22.04 via the Phoronix Test Suite.

Automated Executive Summary

B had the most wins, coming in first place for 59% of the tests.

Based on the geometric mean of all complete results, the fastest (B) was 1.013x the speed of the slowest (A).

The results with the greatest spread from best to worst included:

Apache Spark (Row Count: 1000000 - Partitions: 1000 - Broadcast Inner Join Test Time) at 1.225x
Apache Spark (Row Count: 40000000 - Partitions: 500 - Broadcast Inner Join Test Time) at 1.092x
Apache Spark (Row Count: 40000000 - Partitions: 100 - Inner Join Test Time) at 1.087x
Apache Spark (Row Count: 10000000 - Partitions: 100 - Broadcast Inner Join Test Time) at 1.072x
Apache Spark (Row Count: 40000000 - Partitions: 500 - Inner Join Test Time) at 1.068x
Apache Spark (Row Count: 10000000 - Partitions: 100 - Inner Join Test Time) at 1.06x
Apache Spark (Row Count: 20000000 - Partitions: 1000 - Broadcast Inner Join Test Time) at 1.053x
Apache Spark (Row Count: 20000000 - Partitions: 1000 - Repartition Test Time) at 1.052x
Apache Spark (Row Count: 40000000 - Partitions: 100 - Repartition Test Time) at 1.052x
Apache Spark (Row Count: 1000000 - Partitions: 500 - Inner Join Test Time) at 1.047x.

Test Systems:

A

B

Processor: AMD Ryzen 7 PRO 6850U @ 4.77GHz (8 Cores / 16 Threads), Motherboard: LENOVO 21CM0001US (R22ET46W 1.16 BIOS), Chipset: AMD Device 14b5, Memory: 16GB, Disk: 512GB Micron MTFDKBA512TFK, Graphics: AMD Rembrandt 1GB, Audio: AMD Rembrandt Radeon HD Audio, Network: Qualcomm Atheros QCNFA765

OS: Ubuntu 22.04, Kernel: 5.15.0-41-generic (x86_64), Desktop: GNOME Shell 42.2, Display Server: X Server + Wayland, OpenGL: 4.6 Mesa 22.2.0-devel (git-ba461f8 2022-07-26 jammy-oibaf-ppa) (LLVM 14.0.6 DRM 3.42), Vulkan: 1.3.219, Compiler: GCC 11.2.0, File-System: ext4, Screen Resolution: 1920x1200

Kernel Notes: Transparent Huge Pages: madvise
Processor Notes: Scaling Governor: amd-pstate schedutil (Boost: Enabled) - Platform Profile: balanced - CPU Microcode: 0xa404102 - ACPI Profile: balanced
Java Notes: OpenJDK Runtime Environment (build 11.0.15+10-Ubuntu-0ubuntu0.22.04.1)
Python Notes: Python 3.10.4
Security Notes: itlb_multihit: Not affected + l1tf: Not affected + mds: Not affected + meltdown: Not affected + mmio_stale_data: Not affected + spec_store_bypass: Mitigation of SSB disabled via prctl and seccomp + spectre_v1: Mitigation of usercopy/swapgs barriers and __user pointer sanitization + spectre_v2: Mitigation of Retpolines IBPB: conditional IBRS_FW STIBP: always-on RSB filling + srbds: Not affected + tsx_async_abort: Not affected

	A	B
Apache Spark - 1000000 - 100 - S.5.B.T (sec)	**4.54**	**4.60**
Normalized	100%	98.7%
Standard Deviation	4.8%	
Apache Spark - 1000000 - 100 - C.P.B (sec)	**241.05**	**241.024138854**
Normalized	99.99%	100%
Standard Deviation	1%	
Apache Spark - 1000000 - 100 - C.P.B.U.D (sec)	**13.62**	**13.49**
Normalized	99.05%	100%
Standard Deviation	0.6%	
Apache Spark - 1000000 - 100 - Group By Test Time (sec)	**4.57**	**4.48**
Normalized	98.03%	100%
Standard Deviation	3.3%	
Apache Spark - 1000000 - 100 - R.T.T (sec)	**3.37**	**3.24**
Normalized	96.14%	100%
Standard Deviation	3.1%	
Apache Spark - 1000000 - 100 - I.J.T.T (sec)	**2.44**	**2.39**
Normalized	97.95%	100%
Standard Deviation	3%	
Apache Spark - 1000000 - 100 - B.I.J.T.T (sec)	**2.14**	**1.89**
Normalized	88.32%	100%
Standard Deviation	11.6%	
Apache Spark - 1000000 - 500 - S.5.B.T (sec)	**4.75**	**4.74**
Normalized	99.79%	100%
Standard Deviation	2.1%	
Apache Spark - 1000000 - 500 - C.P.B (sec)	**240.04**	**245.15**
Normalized	100%	97.92%
Standard Deviation	0.2%	

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Apache Spark - 1000000 - 500 - C.P.B.U.D (sec)	**13.66**	**13.44**
Normalized	98.39%	100%
Standard Deviation	0.3%	
Apache Spark - 1000000 - 500 - Group By Test Time (sec)	**4.92**	**5.03**
Normalized	100%	97.81%
Standard Deviation	3.1%	
Apache Spark - 1000000 - 500 - R.T.T (sec)	**3.40**	**3.43**
Normalized	100%	99.13%
Standard Deviation	0.9%	
Apache Spark - 1000000 - 500 - I.J.T.T (sec)	**2.65**	**2.53**
Normalized	95.47%	100%
Standard Deviation	0.6%	
Apache Spark - 1000000 - 500 - B.I.J.T.T (sec)	**3.08**	**2.29**
Normalized	74.35%	100%
Standard Deviation	36%	
Apache Spark - 1000000 - 1000 - S.5.B.T (sec)	**5.11**	**5.08**
Normalized	99.41%	100%
Standard Deviation	2.4%	
Apache Spark - 1000000 - 1000 - C.P.B (sec)	**239.97**	**239.65**
Normalized	99.87%	100%
Standard Deviation	0.6%	
Apache Spark - 1000000 - 1000 - C.P.B.U.D (sec)	**13.50**	**13.46**
Normalized	99.7%	100%
Standard Deviation	0.7%	
Apache Spark - 1000000 - 1000 - Group By Test Time (sec)	**5.32**	**5.55**
Normalized	100%	95.86%
Standard Deviation	0.6%	
Apache Spark - 1000000 - 1000 - R.T.T (sec)	**3.68**	**3.70**
Normalized	100%	99.46%
Standard Deviation	2.2%	
Apache Spark - 1000000 - 1000 - I.J.T.T (sec)	3.17	3.17
Standard Deviation	3%	
Apache Spark - 1000000 - 1000 - B.I.J.T.T (sec)	**3.21**	**2.62**
Normalized	81.62%	100%
Standard Deviation	5.1%	
Apache Spark - 1000000 - 2000 - S.5.B.T (sec)	**5.63**	**5.46**
Normalized	96.98%	100%
Standard Deviation	2.2%	
Apache Spark - 1000000 - 2000 - C.P.B (sec)	**241.47**	**242.20**
Normalized	100%	99.7%
Standard Deviation	0.7%	
Apache Spark - 1000000 - 2000 - C.P.B.U.D (sec)	**13.59**	**13.54**
Normalized	99.63%	100%
Standard Deviation	0.8%	
Apache Spark - 1000000 - 2000 - Group By Test Time (sec)	**6.09**	**6.10**
Normalized	100%	99.84%
Standard Deviation	2.5%	
Apache Spark - 1000000 - 2000 - R.T.T (sec)	**4.15**	**4.09**
Normalized	98.55%	100%
Standard Deviation	2%	
Apache Spark - 1000000 - 2000 - I.J.T.T (sec)	**4.01**	**3.93**
Normalized	98%	100%

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Standard Deviation	2.3%	
Apache Spark - 1000000 - 2000 - B.I.J.T.T (sec)	3.31	3.04
Normalized	91.84%	100%
Standard Deviation	6.9%	
Apache Spark - 10000000 - 100 - S.5.B.T (sec)	19.58	19.62
Normalized	100%	99.8%
Standard Deviation	0.9%	
Apache Spark - 10000000 - 100 - C.P.B (sec)	238.65	240.01
Normalized	100%	99.43%
Standard Deviation	0.2%	
Apache Spark - 10000000 - 100 - C.P.B.U.D (sec)	13.60	13.54
Normalized	99.56%	100%
Standard Deviation	0.5%	
Apache Spark - 10000000 - 100 - Group By Test Time (sec)	10.00	9.72
Normalized	97.2%	100%
Standard Deviation	1.9%	
Apache Spark - 10000000 - 100 - R.T.T (sec)	14.45	14.63
Normalized	100%	98.77%
Standard Deviation	2%	
Apache Spark - 10000000 - 100 - I.J.T.T (sec)	16.71	15.76
Normalized	94.31%	100%
Standard Deviation	3%	
Apache Spark - 10000000 - 100 - B.I.J.T.T (sec)	16.22	15.13
Normalized	93.28%	100%
Standard Deviation	5.4%	
Apache Spark - 10000000 - 500 - S.5.B.T (sec)	19.70	19.79
Normalized	100%	99.55%
Standard Deviation	0.5%	
Apache Spark - 10000000 - 500 - C.P.B (sec)	239.05	240.25
Normalized	100%	99.5%
Standard Deviation	0.3%	
Apache Spark - 10000000 - 500 - C.P.B.U.D (sec)	13.56	13.47
Normalized	99.34%	100%
Standard Deviation	0.6%	
Apache Spark - 10000000 - 500 - Group By Test Time (sec)	9.86	10.02
Normalized	100%	98.4%
Standard Deviation	1.1%	
Apache Spark - 10000000 - 500 - R.T.T (sec)	14.07	13.94
Normalized	99.08%	100%
Standard Deviation	1.4%	
Apache Spark - 10000000 - 500 - I.J.T.T (sec)	15.11	15.41
Normalized	100%	98.05%
Standard Deviation	1.4%	
Apache Spark - 10000000 - 500 - B.I.J.T.T (sec)	15.05	15.17
Normalized	100%	99.21%
Standard Deviation	0.7%	
Apache Spark - 20000000 - 100 - S.5.B.T (sec)	36.52	36.48
Normalized	99.89%	100%
Standard Deviation	0.9%	
Apache Spark - 20000000 - 100 - C.P.B (sec)	239.84	240.03
Normalized	100%	99.92%
Standard Deviation	0.5%	
Apache Spark - 20000000 - 100 - C.P.B.U.D (sec)	13.51	13.67

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Normalized	100%	98.83%
Standard Deviation	0.2%	
Apache Spark - 20000000 - 100 - Group By Test Time (sec)	**15.37**	**14.90**
Normalized	96.94%	100%
Standard Deviation	2.4%	
Apache Spark - 20000000 - 100 - R.T.T (sec)	**27.45**	**27.02**
Normalized	98.43%	100%
Standard Deviation	0.9%	
Apache Spark - 20000000 - 100 - I.J.T.T (sec)	**32.48**	**31.13**
Normalized	95.84%	100%
Standard Deviation	0.7%	
Apache Spark - 20000000 - 100 - B.I.J.T.T (sec)	**32.10**	**31.82**
Normalized	99.13%	100%
Standard Deviation	1.6%	
Apache Spark - 20000000 - 500 - S.5.B.T (sec)	**35.00**	**34.98**
Normalized	99.94%	100%
Standard Deviation	0.9%	
Apache Spark - 20000000 - 500 - C.P.B (sec)	**241.40**	**239.40**
Normalized	99.17%	100%
Standard Deviation	0.5%	
Apache Spark - 20000000 - 500 - C.P.B.U.D (sec)	**13.50**	**13.45**
Normalized	99.63%	100%
Standard Deviation	0.8%	
Apache Spark - 20000000 - 500 - Group By Test Time (sec)	**14.92**	**14.84**
Normalized	99.46%	100%
Standard Deviation	1.2%	
Apache Spark - 20000000 - 500 - R.T.T (sec)	**26.27**	**25.55**
Normalized	97.26%	100%
Standard Deviation	2.9%	
Apache Spark - 20000000 - 500 - I.J.T.T (sec)	**30.27**	**29.12**
Normalized	96.2%	100%
Standard Deviation	5.4%	
Apache Spark - 20000000 - 500 - B.I.J.T.T (sec)	**28.64**	**28.30**
Normalized	98.81%	100%
Standard Deviation	1.5%	
Apache Spark - 40000000 - 100 - S.5.B.T (sec)	**69.06**	**66.03**
Normalized	95.61%	100%
Standard Deviation	1.9%	
Apache Spark - 40000000 - 100 - C.P.B (sec)	**249.74**	**240.99**
Normalized	96.5%	100%
Standard Deviation	0.6%	
Apache Spark - 40000000 - 100 - C.P.B.U.D (sec)	**13.83**	**13.70**
Normalized	99.06%	100%
Standard Deviation	0.6%	
Apache Spark - 40000000 - 100 - Group By Test Time (sec)	**40.60**	**40.43**
Normalized	99.58%	100%
Standard Deviation	1.1%	
Apache Spark - 40000000 - 100 - R.T.T (sec)	**52.39**	**49.82**
Normalized	95.09%	100%
Standard Deviation	4.5%	
Apache Spark - 40000000 - 100 - I.J.T.T (sec)	**61.59**	**56.68**
Normalized	92.03%	100%

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Standard Deviation	5%	
Apache Spark - 40000000 - 100 - B.I.J.T.T (sec)	60.30	58.25
Normalized	96.6%	100%
Standard Deviation	4.1%	
Apache Spark - 40000000 - 500 - S.5.B.T (sec)	69.51	68.08
Normalized	97.94%	100%
Standard Deviation	0.9%	
Apache Spark - 40000000 - 500 - C.P.B (sec)	249.44	244.74
Normalized	98.12%	100%
Standard Deviation	2.4%	
Apache Spark - 40000000 - 500 - C.P.B.U.D (sec)	13.66	13.43
Normalized	98.32%	100%
Standard Deviation	0.8%	
Apache Spark - 40000000 - 500 - Group By Test Time (sec)	35.35	35.64
Normalized	100%	99.19%
Standard Deviation	2.1%	
Apache Spark - 40000000 - 500 - R.T.T (sec)	50.68	49.20
Normalized	97.08%	100%
Standard Deviation	0.8%	
Apache Spark - 40000000 - 500 - I.J.T.T (sec)	61.35	57.43
Normalized	93.61%	100%
Standard Deviation	4.5%	
Apache Spark - 40000000 - 500 - B.I.J.T.T (sec)	64.33	58.92
Normalized	91.59%	100%
Standard Deviation	4.5%	
Apache Spark - 10000000 - 1000 - S.5.B.T (sec)	19.99	20.05
Normalized	100%	99.7%
Standard Deviation	0.7%	
Apache Spark - 10000000 - 1000 - C.P.B (sec)	241.82	239.84
Normalized	99.18%	100%
Standard Deviation	0.9%	
Apache Spark - 10000000 - 1000 - C.P.B.U.D (sec)	13.56	13.58
Normalized	100%	99.85%
Standard Deviation	0.4%	
Apache Spark - 10000000 - 1000 - Group By Test Time (sec)	10.44	10.65
Normalized	100%	98.03%
Standard Deviation	2%	
Apache Spark - 10000000 - 1000 - R.T.T (sec)	13.96	14.12
Normalized	100%	98.87%
Standard Deviation	0.9%	
Apache Spark - 10000000 - 1000 - I.J.T.T (sec)	15.58	15.67
Normalized	100%	99.43%
Standard Deviation	0.7%	
Apache Spark - 10000000 - 1000 - B.I.J.T.T (sec)	14.92	15.03
Normalized	100%	99.27%
Standard Deviation	1.3%	
Apache Spark - 10000000 - 2000 - S.5.B.T (sec)	20.40	20.11
Normalized	98.58%	100%
Standard Deviation	0.7%	
Apache Spark - 10000000 - 2000 - C.P.B (sec)	241.94	241.11
Normalized	99.66%	100%
Standard Deviation	0.6%	
Apache Spark - 10000000 - 2000 - C.P.B.U.D (sec)	13.54	13.60

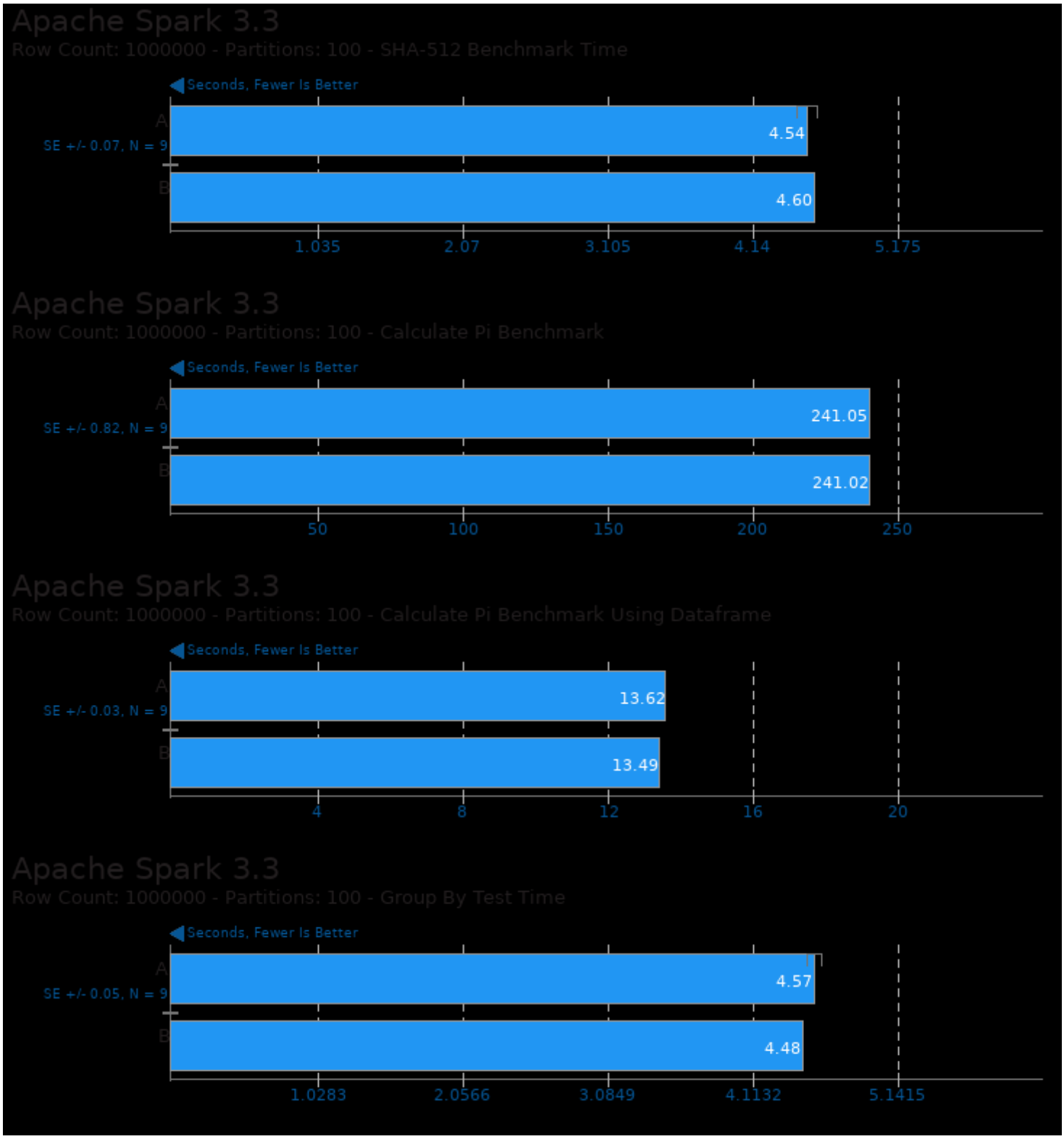
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Normalized	100%	99.56%
Standard Deviation	0.5%	
Apache Spark - 10000000 - 2000 - Group By Test Time (sec)	**10.94**	**10.50**
Normalized	95.98%	100%
Standard Deviation	2%	
Apache Spark - 10000000 - 2000 - R.T.T (sec)	**14.44**	**14.17**
Normalized	98.13%	100%
Standard Deviation	0.2%	
Apache Spark - 10000000 - 2000 - I.J.T.T (sec)	**16.80**	**16.17**
Normalized	96.25%	100%
Standard Deviation	1.7%	
Apache Spark - 10000000 - 2000 - B.I.J.T.T (sec)	**15.63**	**15.34**
Normalized	98.14%	100%
Standard Deviation	1.2%	
Apache Spark - 20000000 - 1000 - S.5.B.T (sec)	**35.73**	**36.03**
Normalized	100%	99.17%
Standard Deviation	2.1%	
Apache Spark - 20000000 - 1000 - C.P.B (sec)	**241.00**	**244.01**
Normalized	100%	98.77%
Standard Deviation	0.5%	
Apache Spark - 20000000 - 1000 - C.P.B.U.D (sec)	**13.60**	**13.53**
Normalized	99.49%	100%
Standard Deviation	0.1%	
Apache Spark - 20000000 - 1000 - Group By Test Time (sec)	**14.95**	**15.58**
Normalized	100%	95.96%
Standard Deviation	0.8%	
Apache Spark - 20000000 - 1000 - R.T.T (sec)	**25.65**	**26.99**
Normalized	100%	95.04%
Standard Deviation	0.8%	
Apache Spark - 20000000 - 1000 - I.J.T.T (sec)	**30.15**	**30.55**
Normalized	100%	98.69%
Standard Deviation	2.4%	
Apache Spark - 20000000 - 1000 - B.I.J.T.T (sec)	**28.77**	**30.29**
Normalized	100%	94.98%
Standard Deviation	0.7%	
Apache Spark - 20000000 - 2000 - S.5.B.T (sec)	**36.28**	**36.36**
Normalized	100%	99.78%
Standard Deviation	1.1%	
Apache Spark - 20000000 - 2000 - C.P.B (sec)	**242.09**	**243.77**
Normalized	100%	99.31%
Standard Deviation	0.7%	
Apache Spark - 20000000 - 2000 - C.P.B.U.D (sec)	**13.58**	**13.48**
Normalized	99.26%	100%
Standard Deviation	0.6%	
Apache Spark - 20000000 - 2000 - Group By Test Time (sec)	**15.78**	**15.79**
Normalized	100%	99.94%
Standard Deviation	2.1%	
Apache Spark - 20000000 - 2000 - R.T.T (sec)	**26.46**	**26.54**
Normalized	100%	99.7%
Standard Deviation	3.2%	
Apache Spark - 20000000 - 2000 - I.J.T.T (sec)	**30.36**	**30.83**
Normalized	100%	98.48%

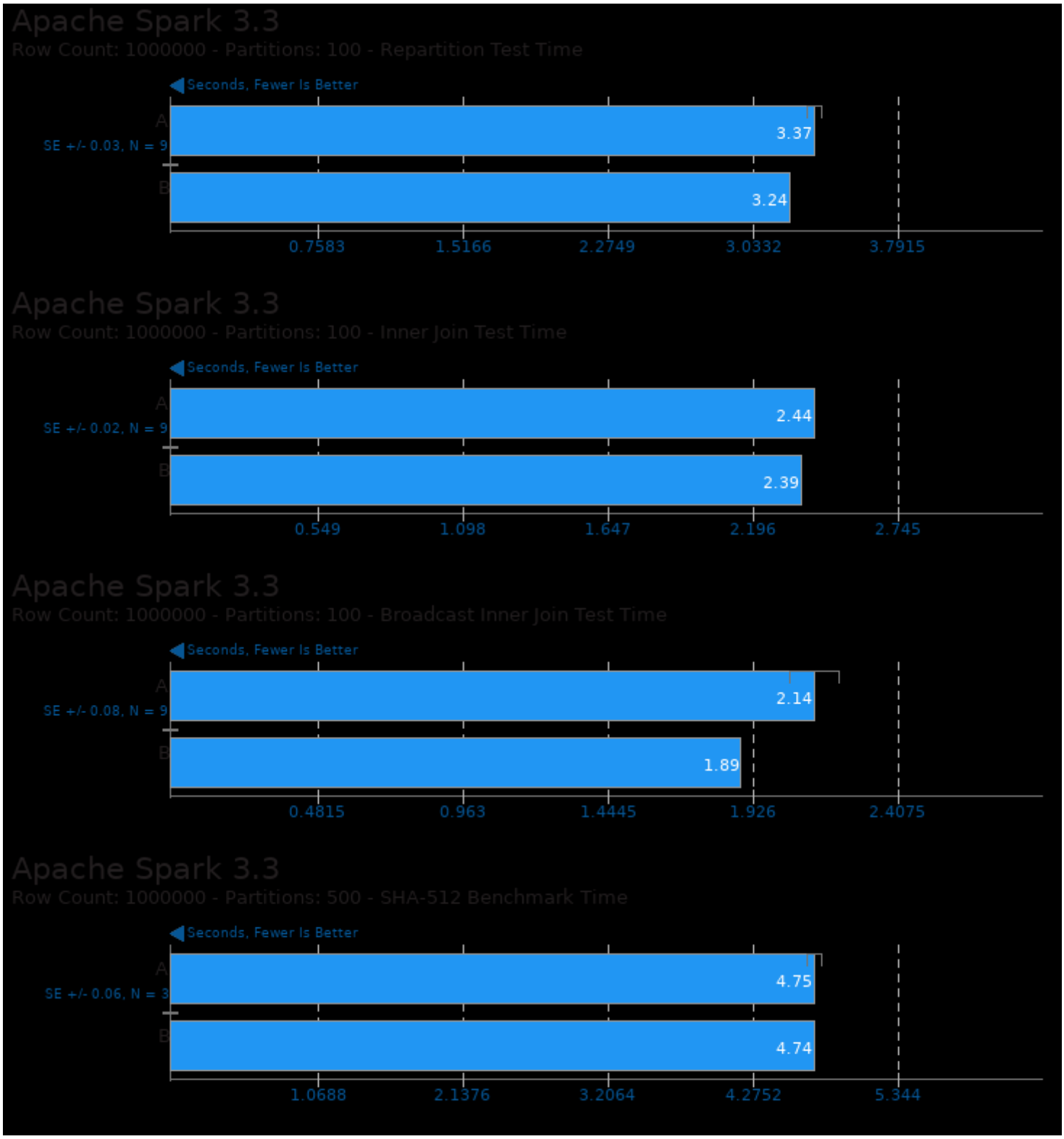
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Standard Deviation	0.4%	
Apache Spark - 20000000 - 2000 - B.I.J.T.T (sec)	29.44	29.56
Normalized	100%	99.59%
Standard Deviation	1%	
Apache Spark - 40000000 - 1000 - S.5.B.T (sec)	69.98	69.51
Normalized	99.33%	100%
Standard Deviation	1.3%	
Apache Spark - 40000000 - 1000 - C.P.B (sec)	247.40	246.28
Normalized	99.55%	100%
Standard Deviation	0.3%	
Apache Spark - 40000000 - 1000 - C.P.B.U.D (sec)	13.58	13.65
Normalized	100%	99.49%
Standard Deviation	0.6%	
Apache Spark - 40000000 - 1000 - Group By Test Time (sec)	33.95	34.84
Normalized	100%	97.45%
Standard Deviation	1.4%	
Apache Spark - 40000000 - 1000 - R.T.T (sec)	50.05	50.27
Normalized	100%	99.56%
Standard Deviation	2.1%	
Apache Spark - 40000000 - 1000 - I.J.T.T (sec)	59.25	59.74
Normalized	100%	99.18%
Standard Deviation	2.5%	
Apache Spark - 40000000 - 1000 - B.I.J.T.T (sec)	59.41	59.06
Normalized	99.41%	100%
Standard Deviation	2.1%	
Apache Spark - 40000000 - 2000 - S.5.B.T (sec)	70.44	70.43
Normalized	99.99%	100%
Standard Deviation	0.3%	
Apache Spark - 40000000 - 2000 - C.P.B (sec)	246.54	250.15
Normalized	100%	98.56%
Standard Deviation	0.5%	
Apache Spark - 40000000 - 2000 - C.P.B.U.D (sec)	13.83	13.73
Normalized	99.28%	100%
Standard Deviation	0.2%	
Apache Spark - 40000000 - 2000 - Group By Test Time (sec)	34.71	34.91
Normalized	100%	99.43%
Standard Deviation	2.2%	
Apache Spark - 40000000 - 2000 - R.T.T (sec)	50.81	50.24
Normalized	98.88%	100%
Standard Deviation	1.3%	
Apache Spark - 40000000 - 2000 - I.J.T.T (sec)	61.61	61.55
Normalized	99.9%	100%
Standard Deviation	1.3%	
Apache Spark - 40000000 - 2000 - B.I.J.T.T (sec)	61.85	61.79
Normalized	99.9%	100%
Standard Deviation	2.4%	

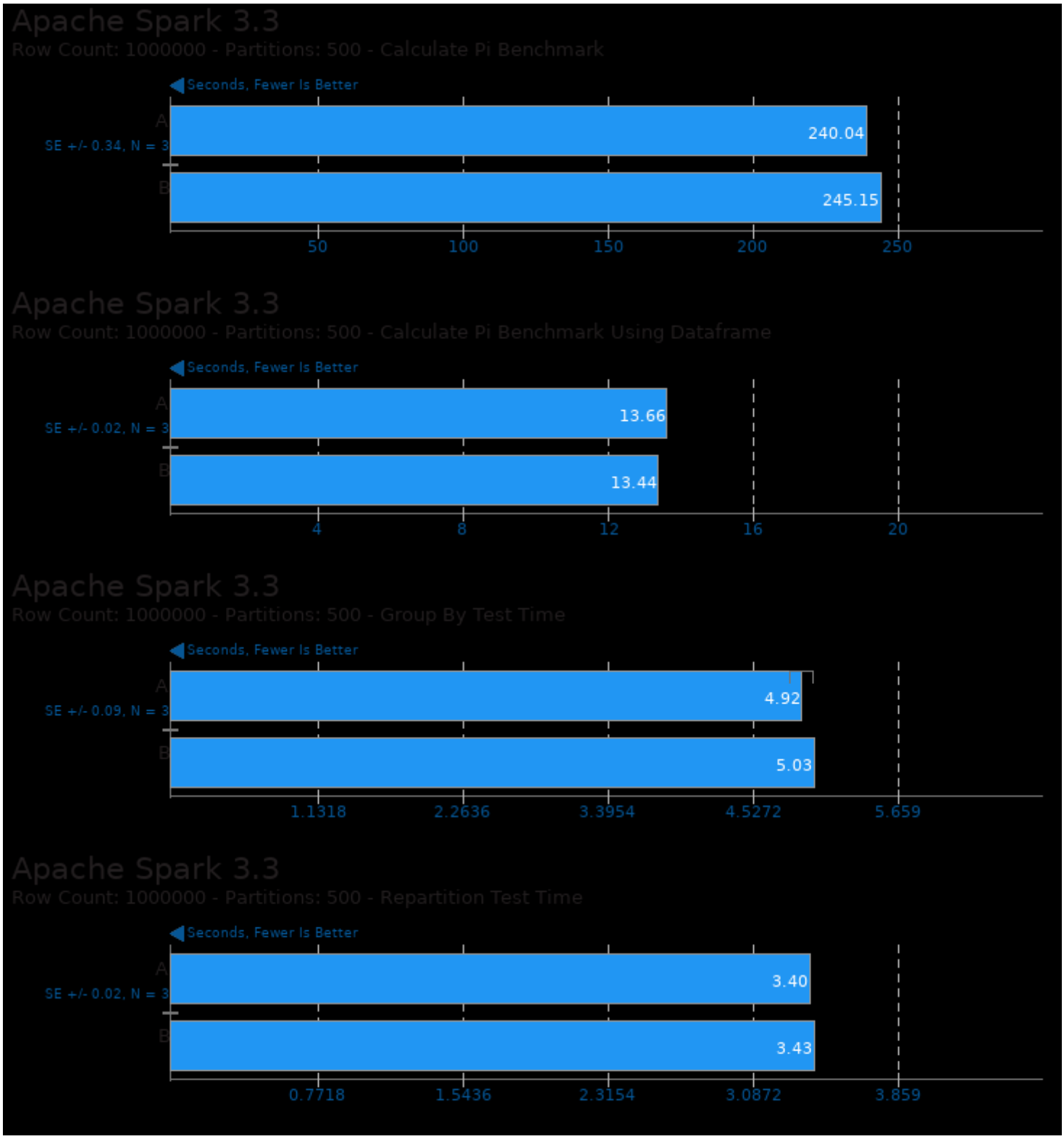
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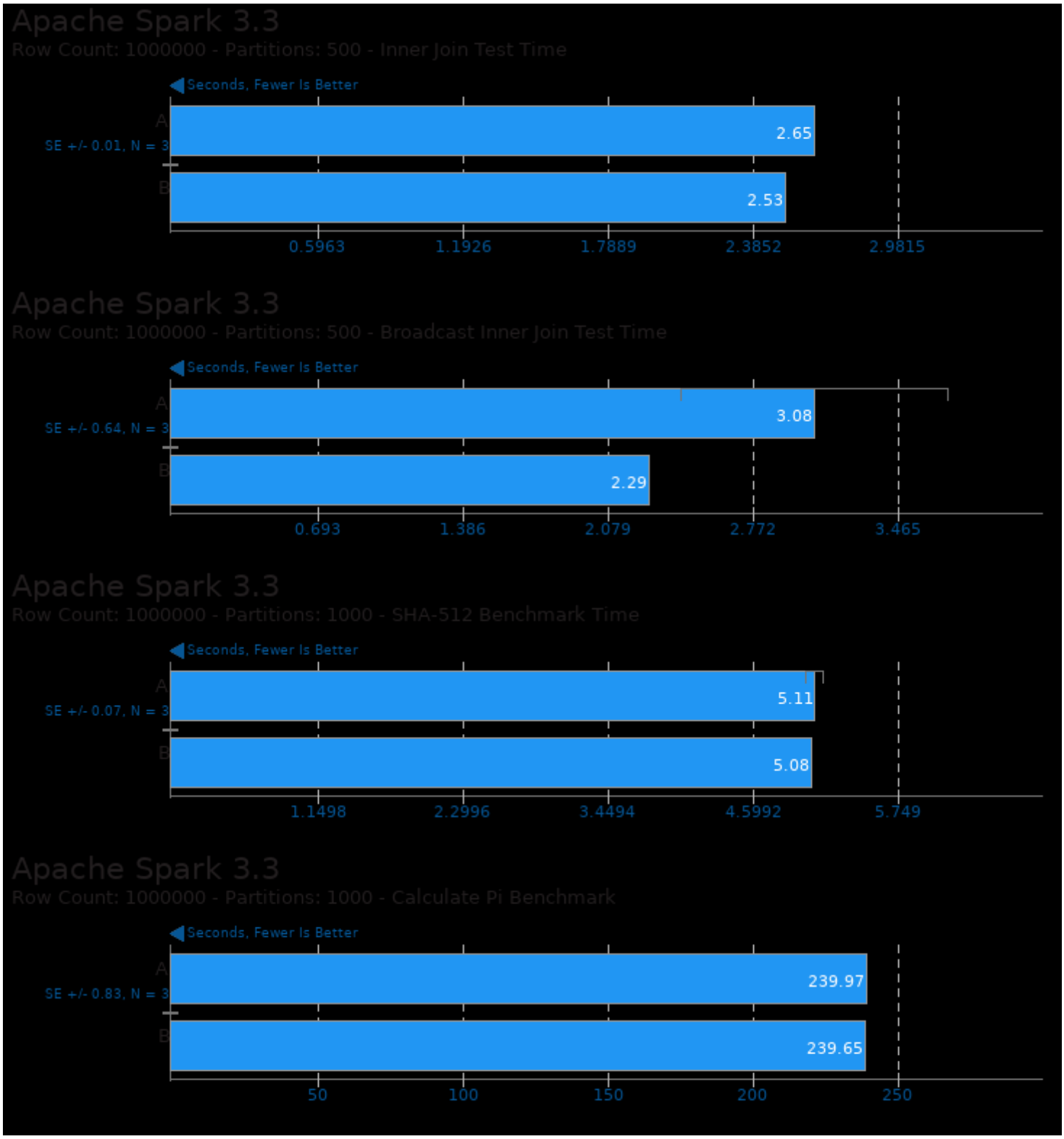
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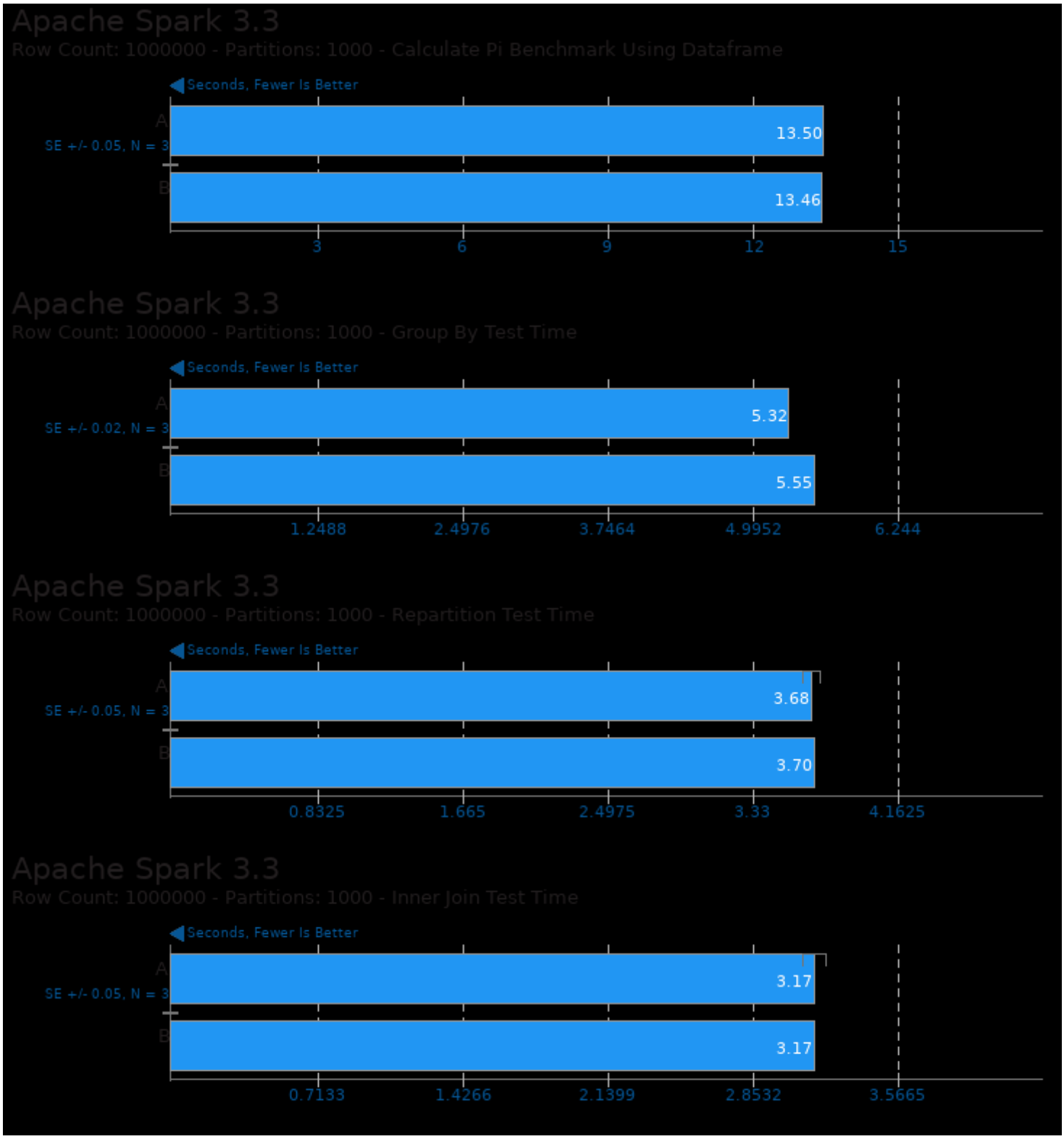
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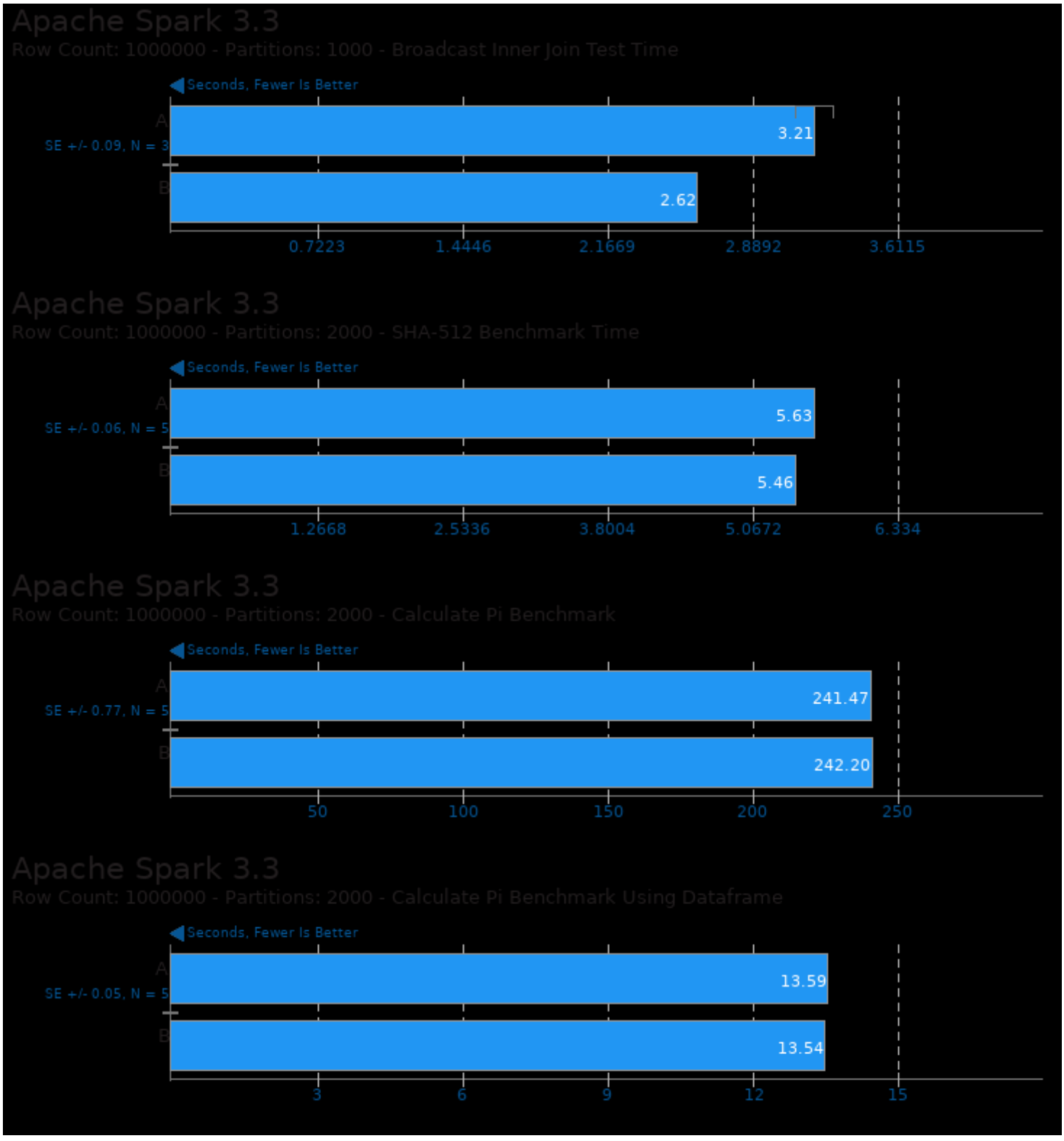
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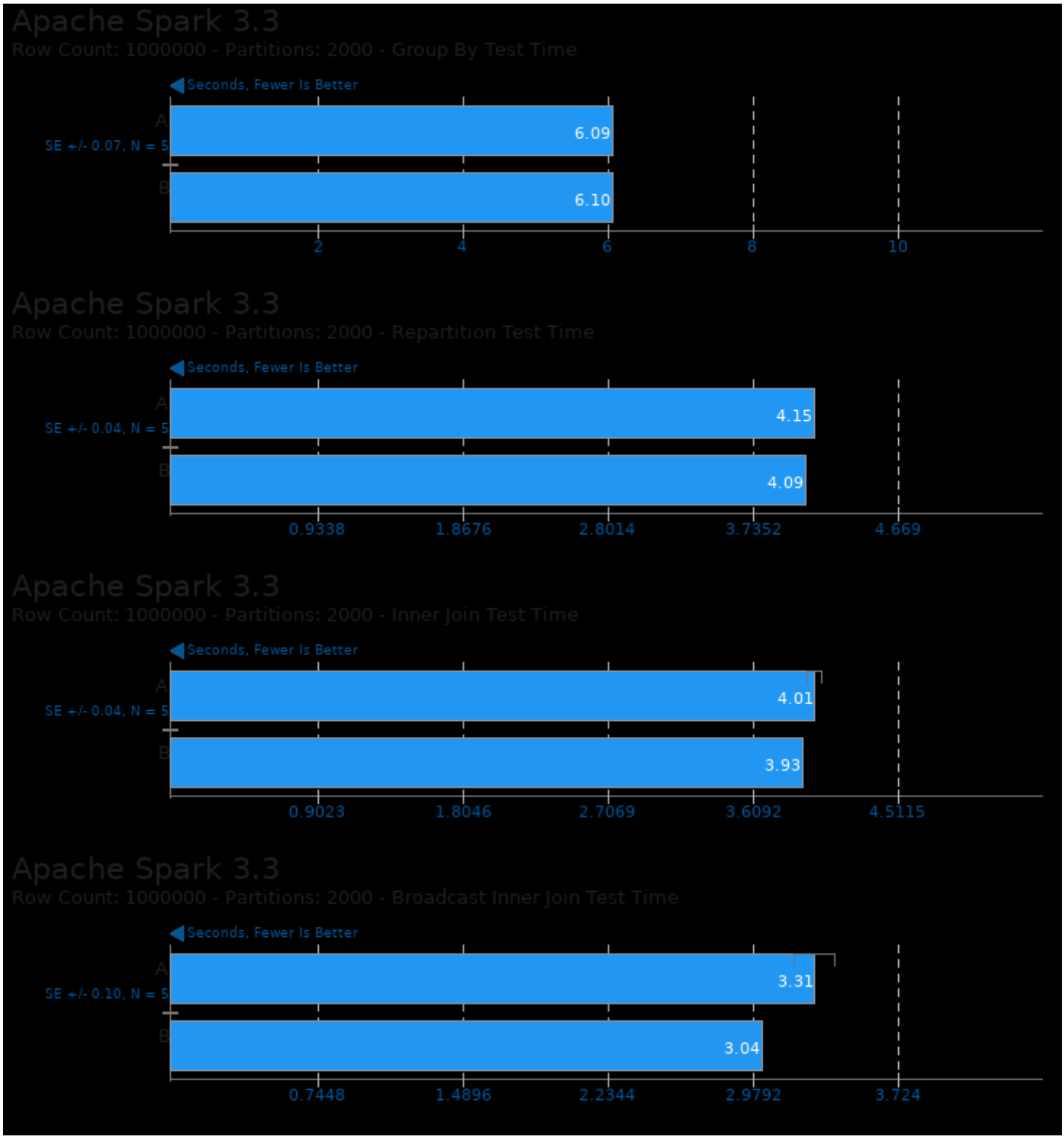
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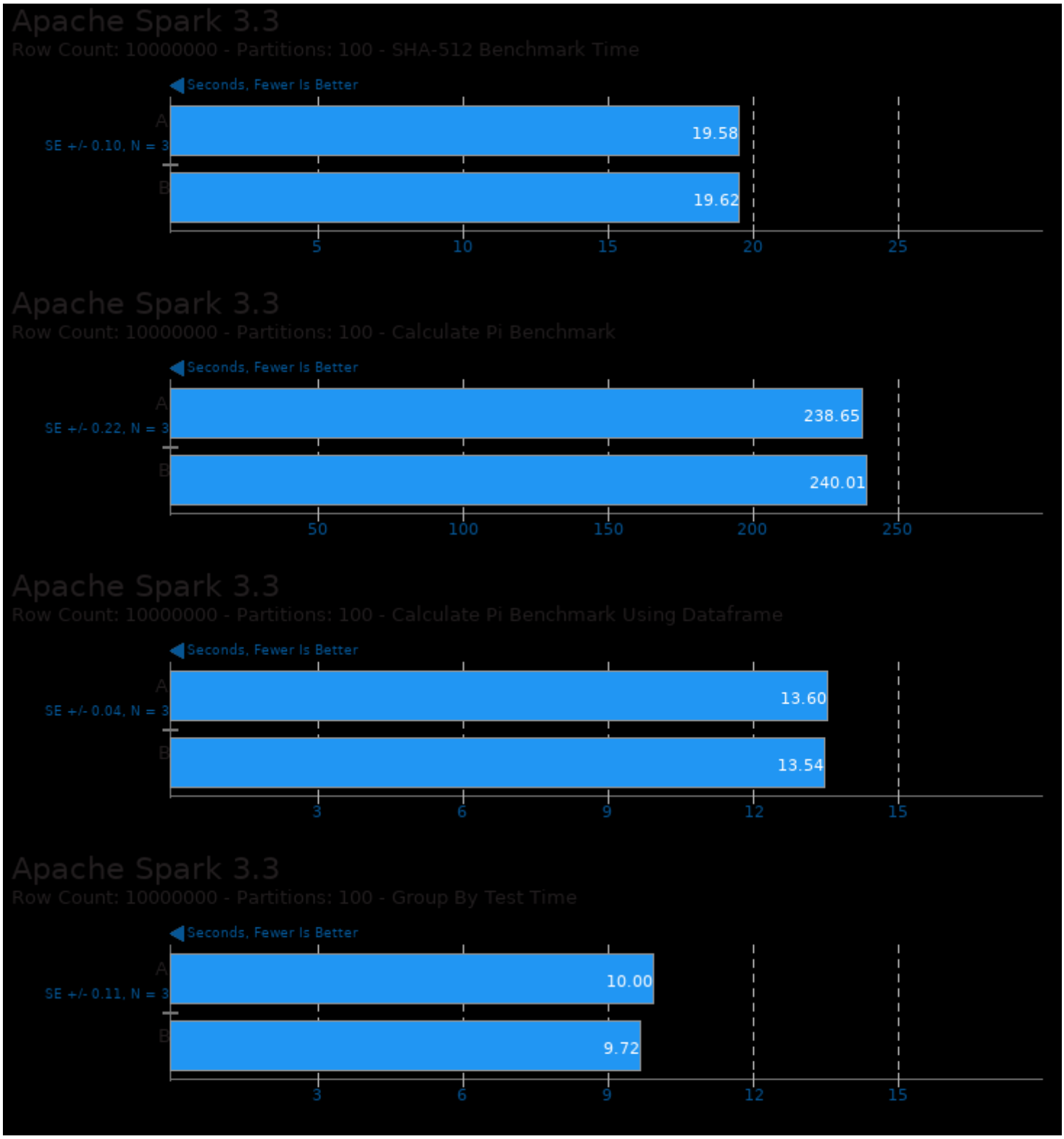
spark rembrandty



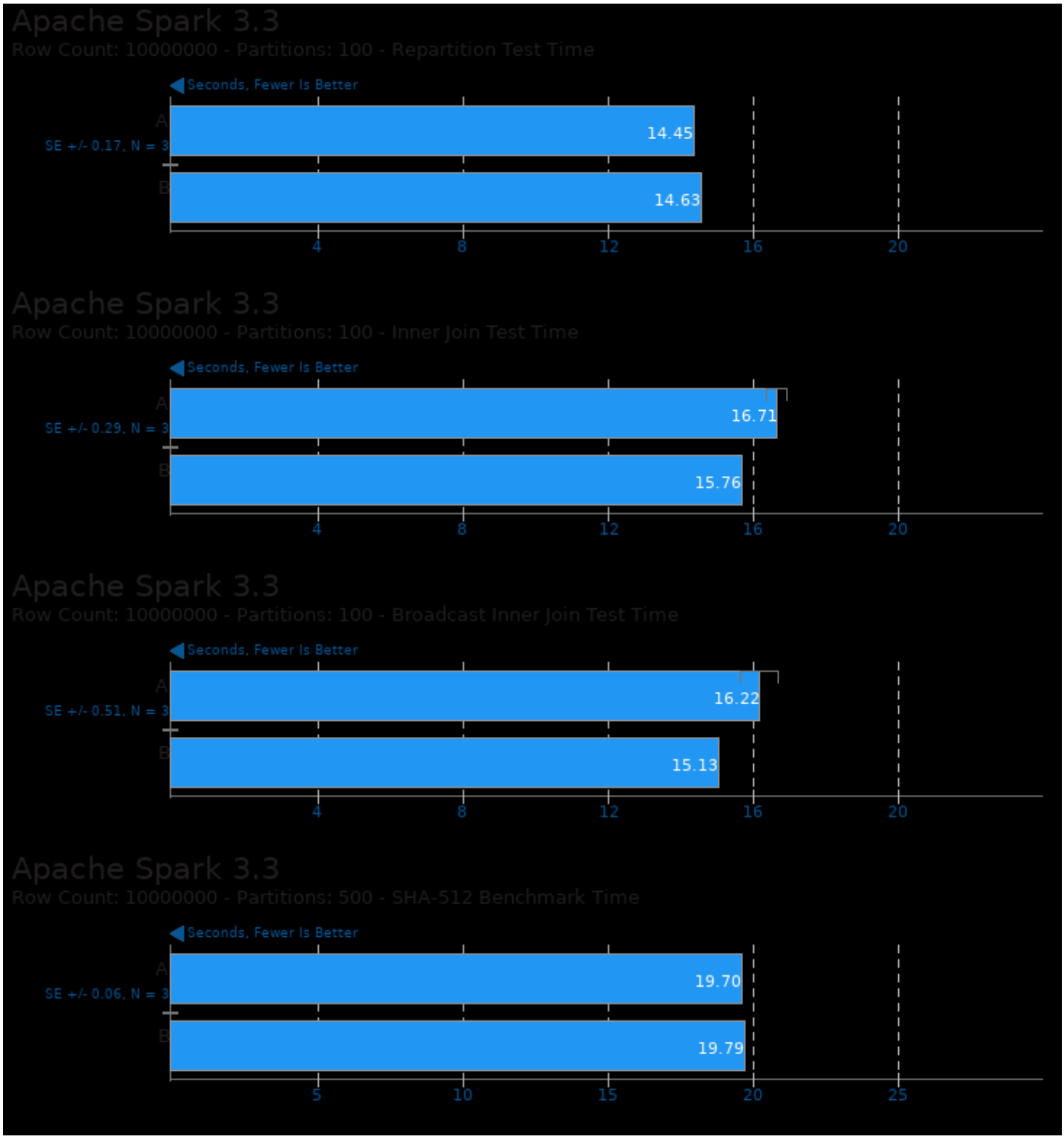
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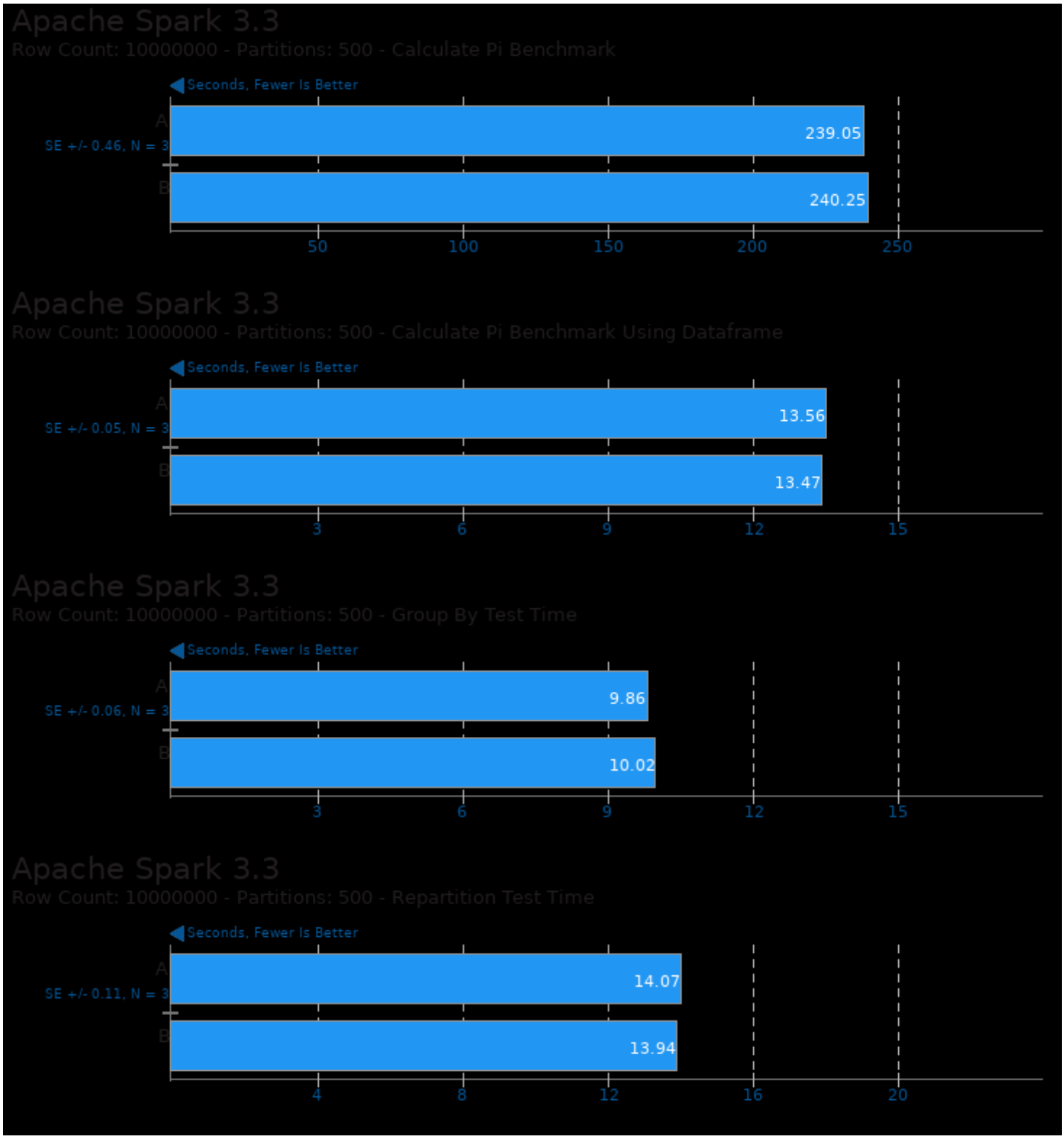
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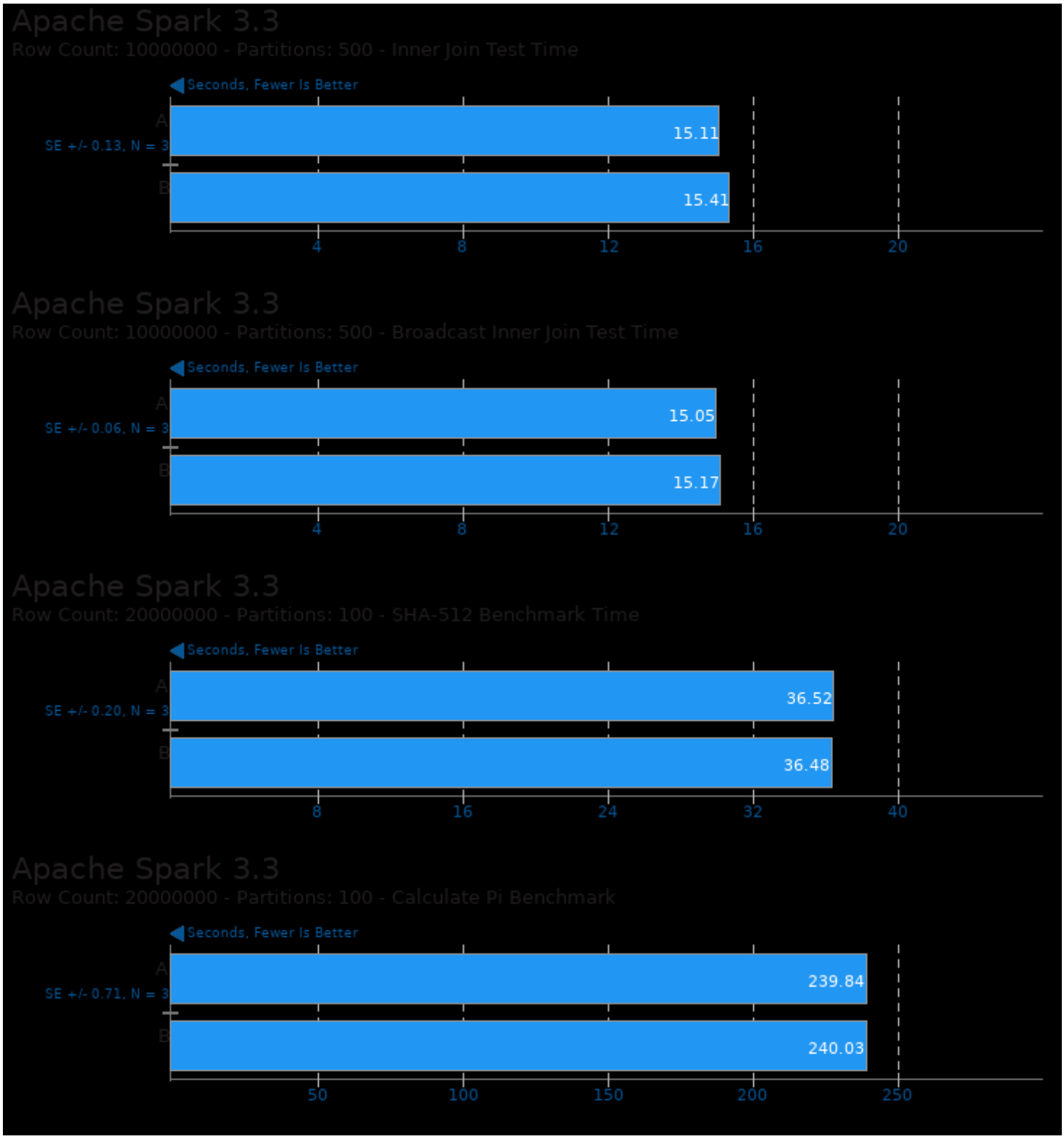
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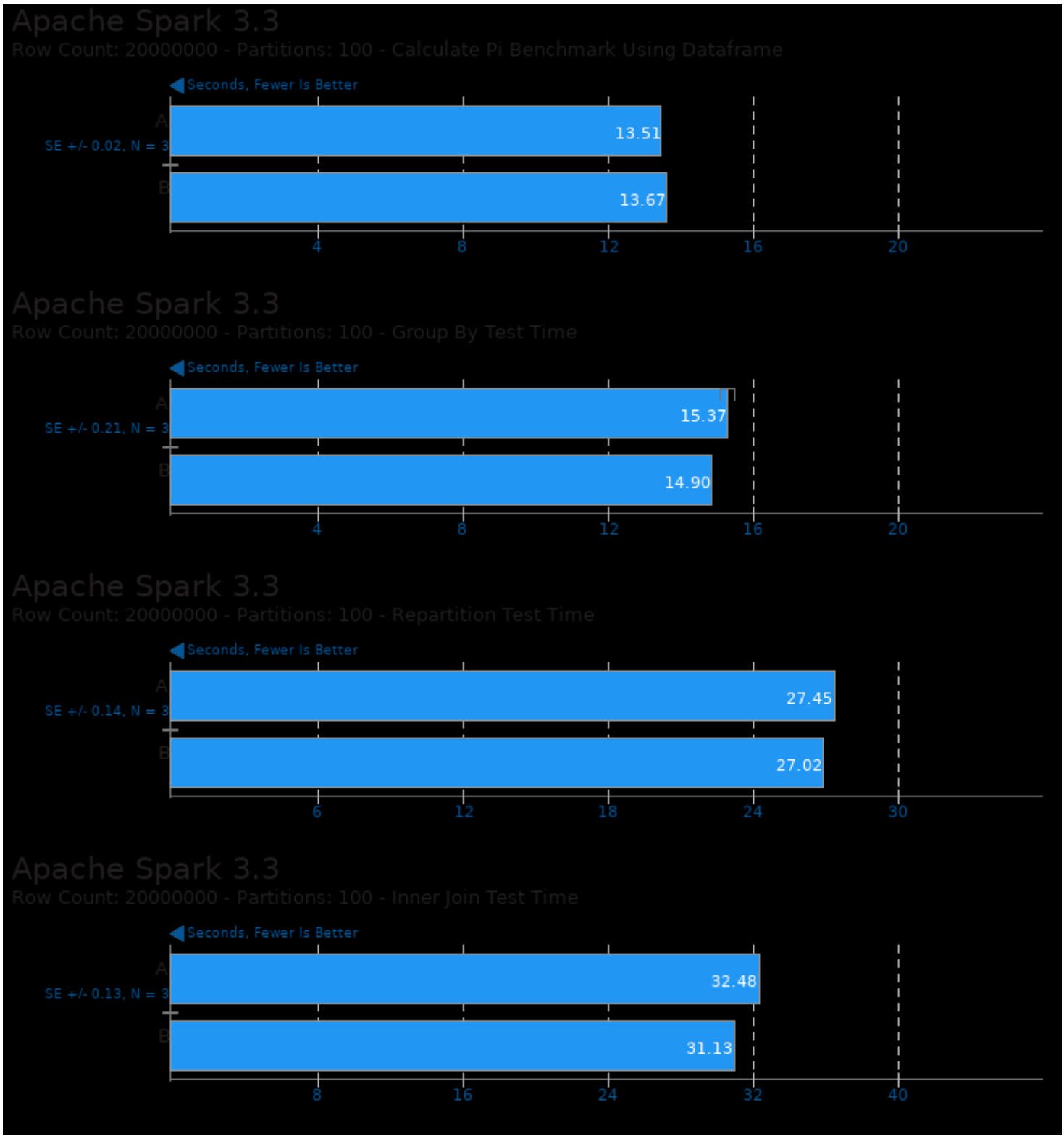
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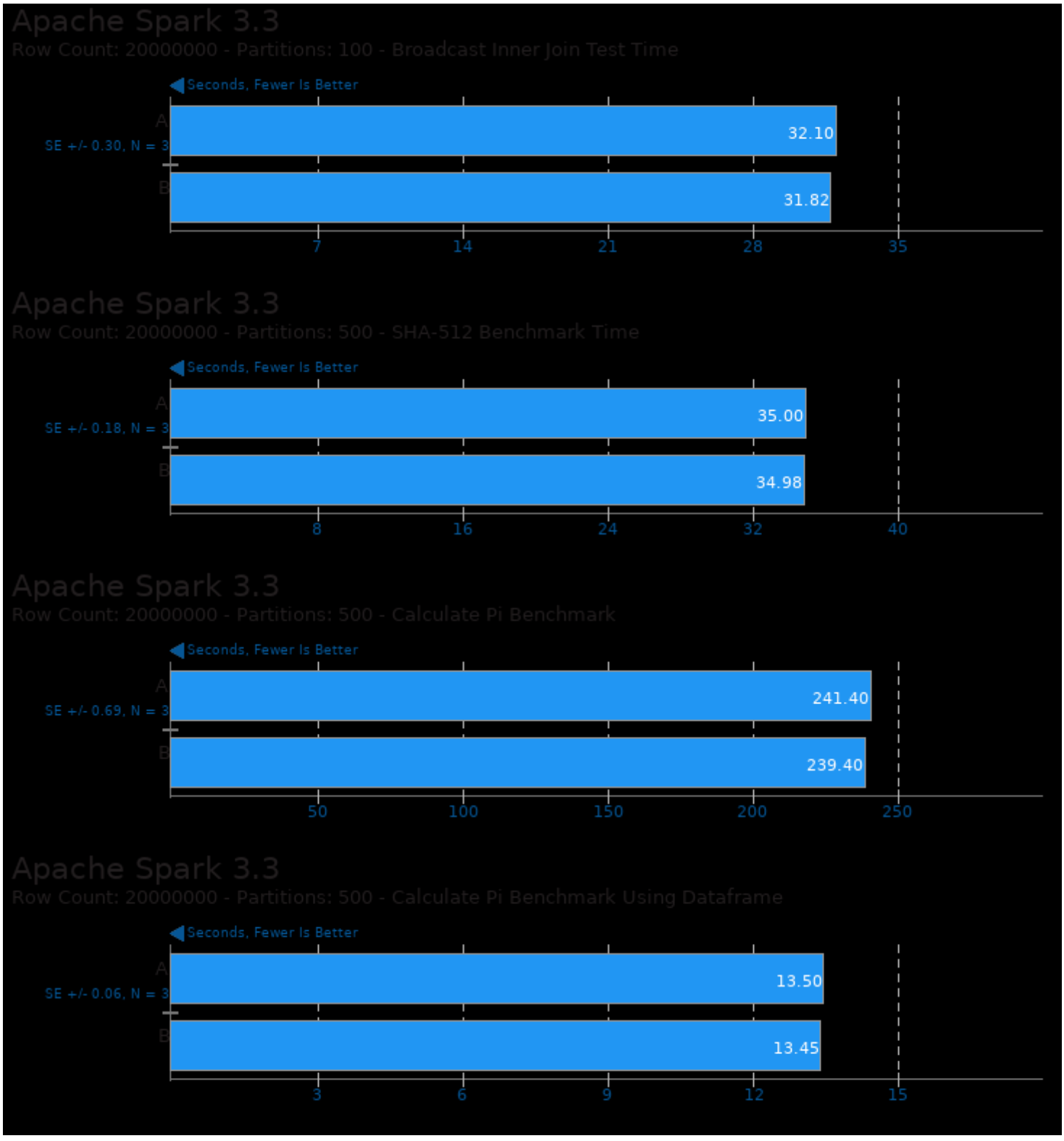
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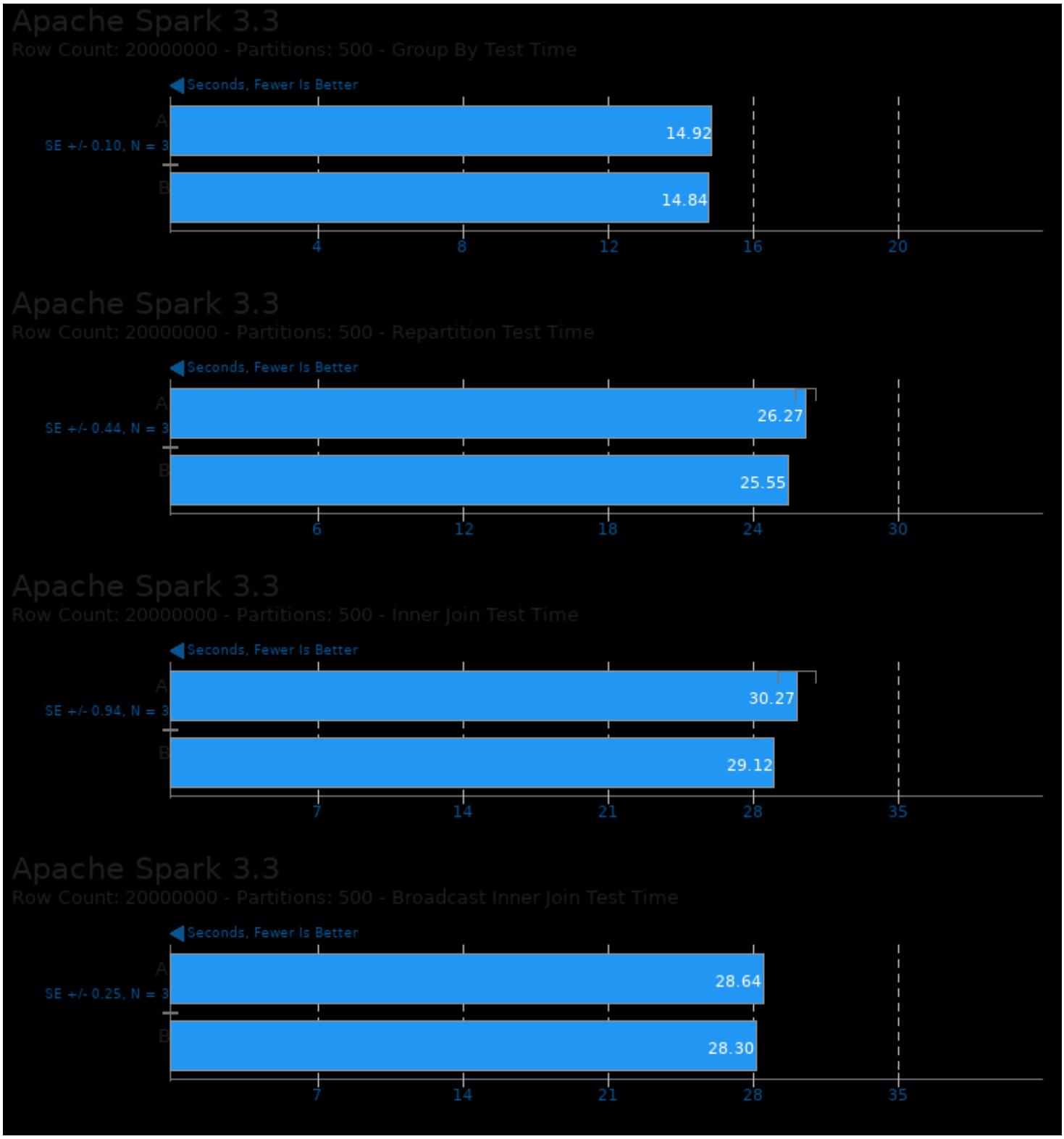
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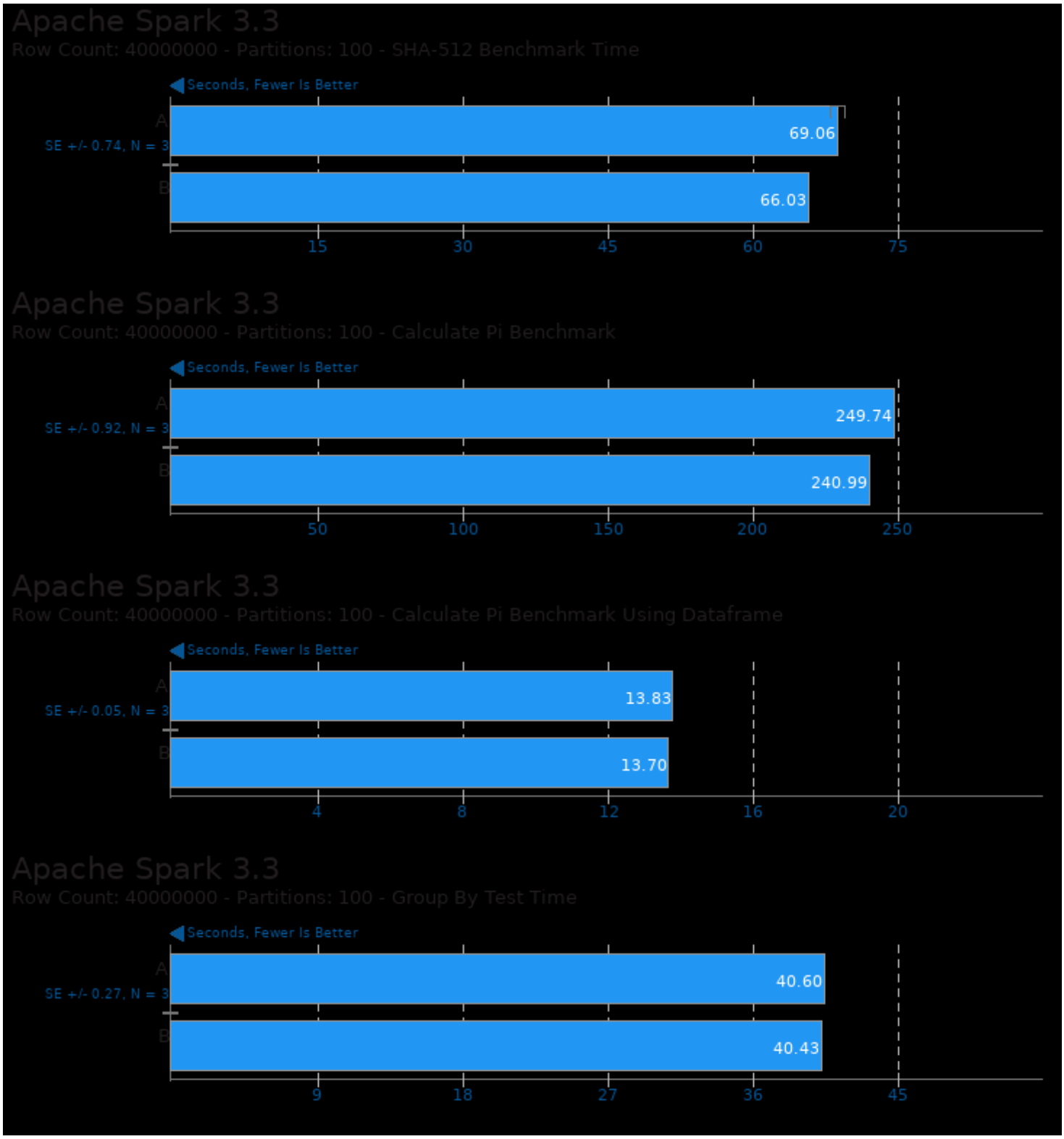
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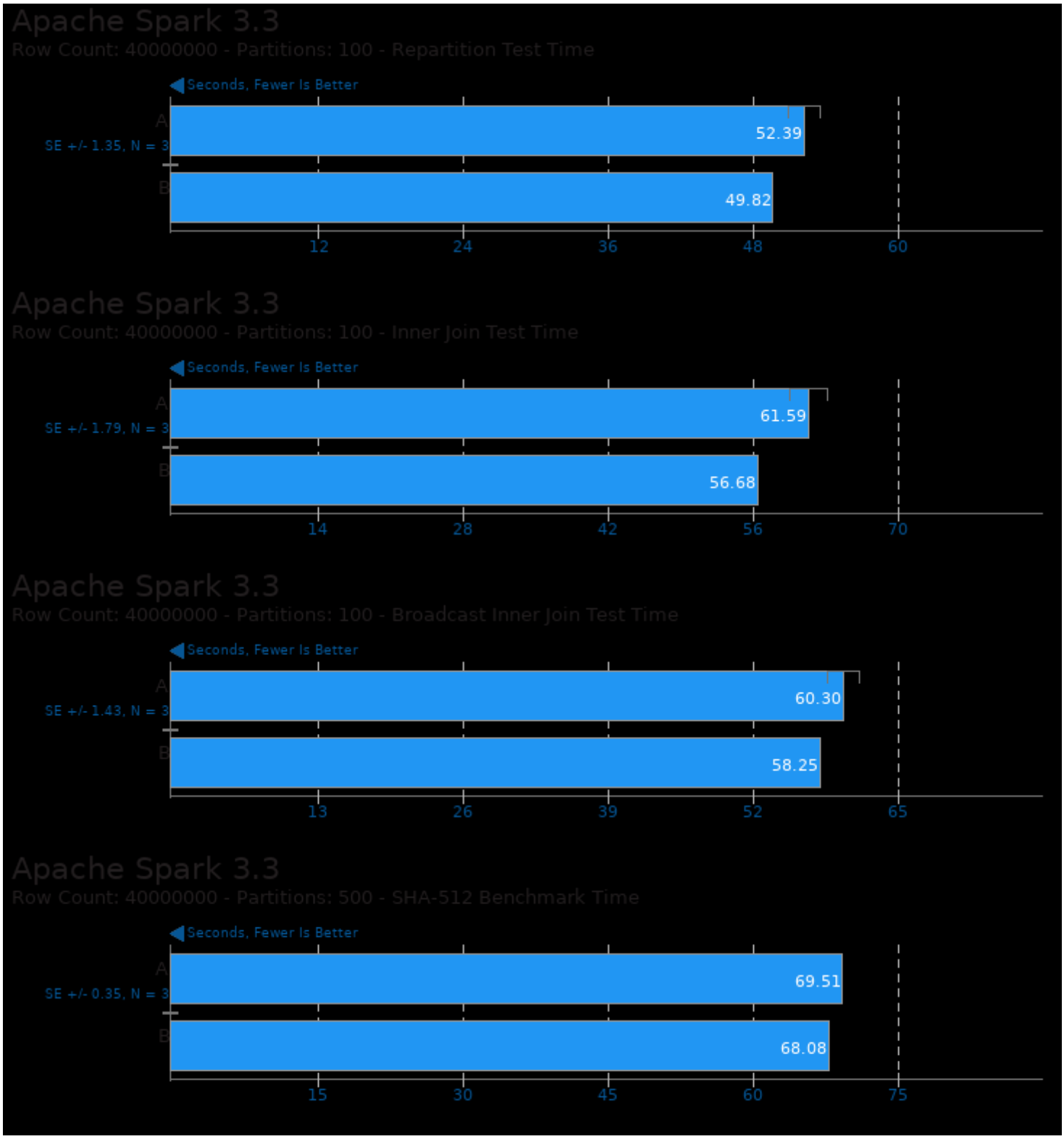
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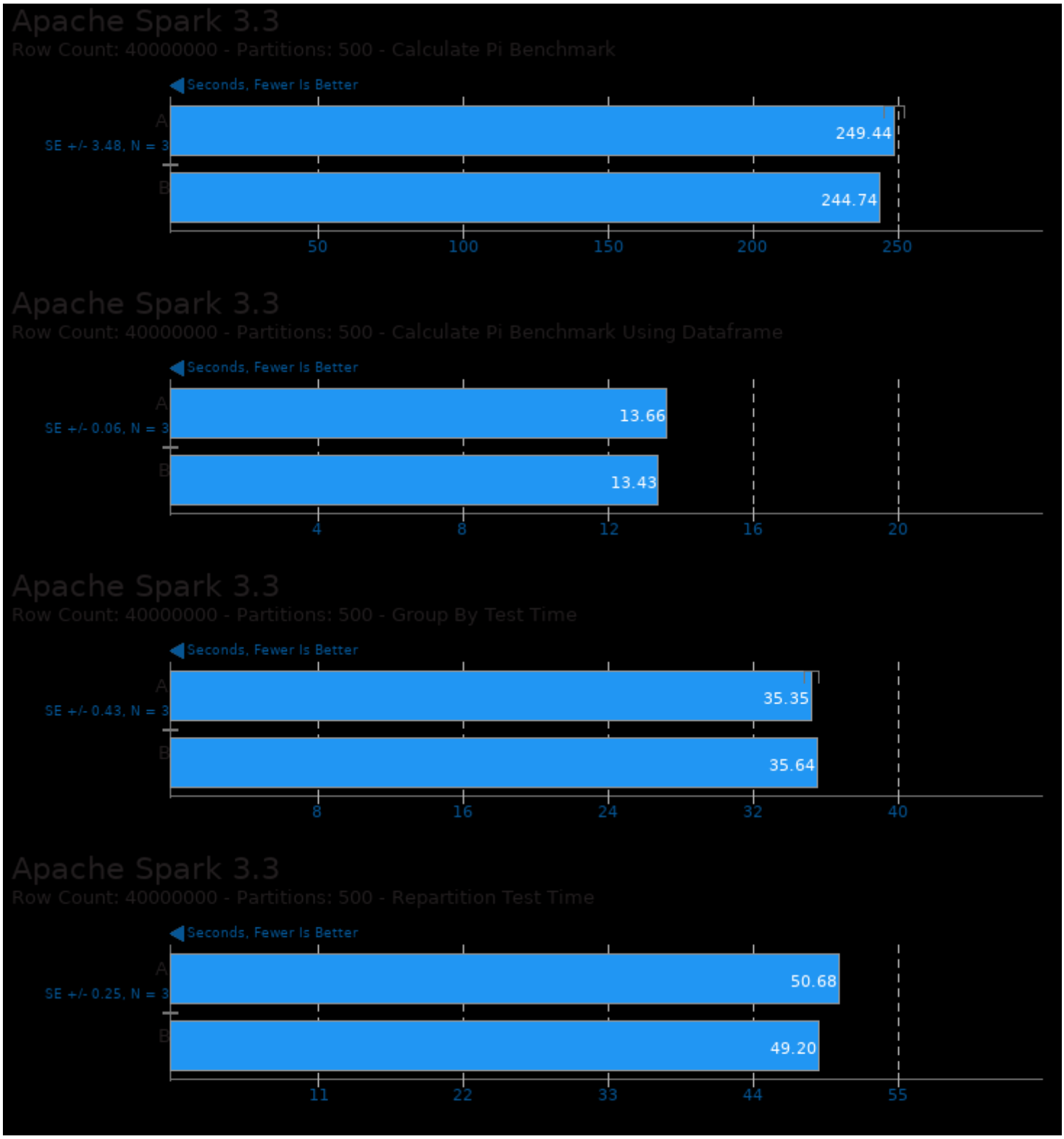
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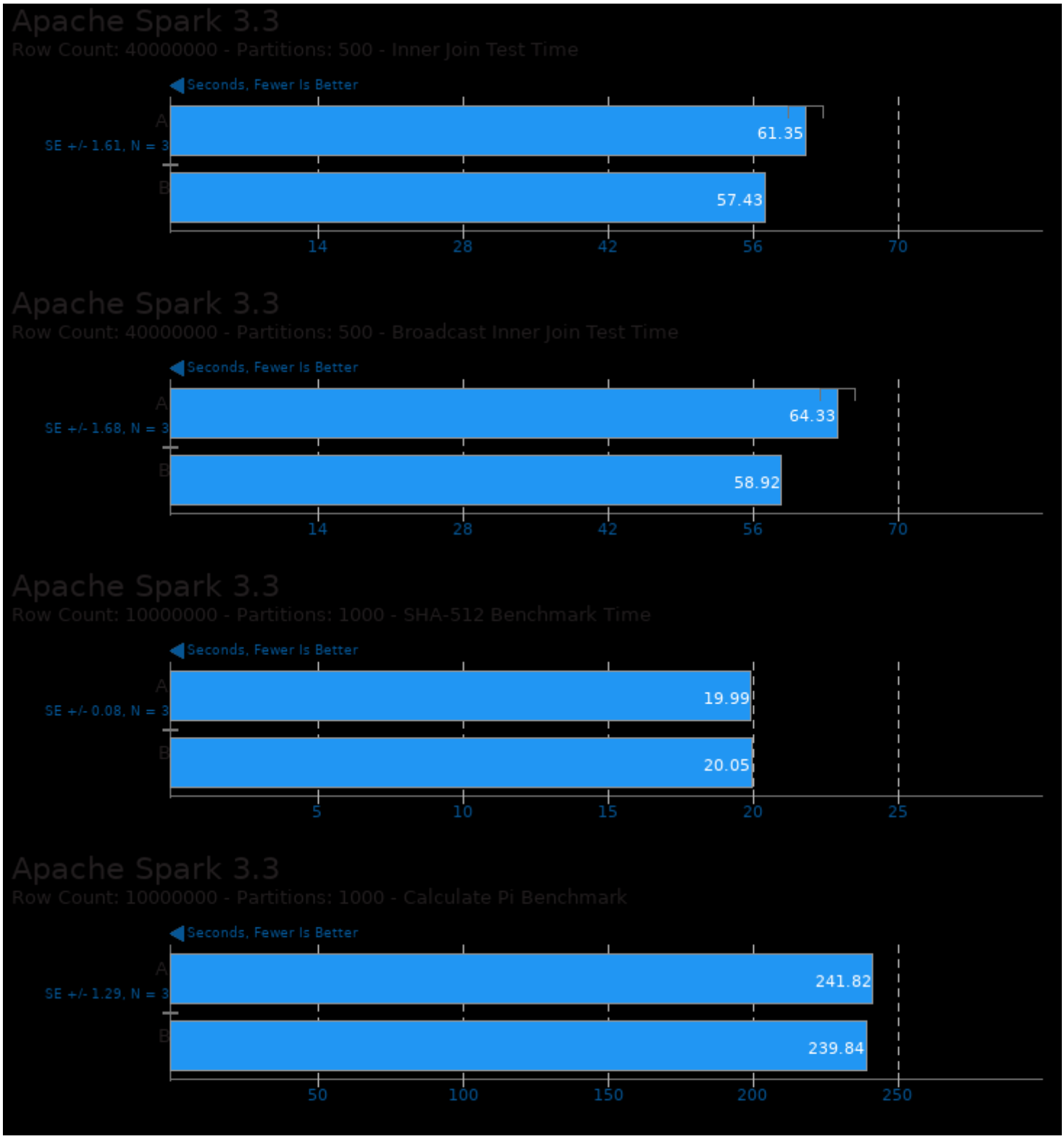
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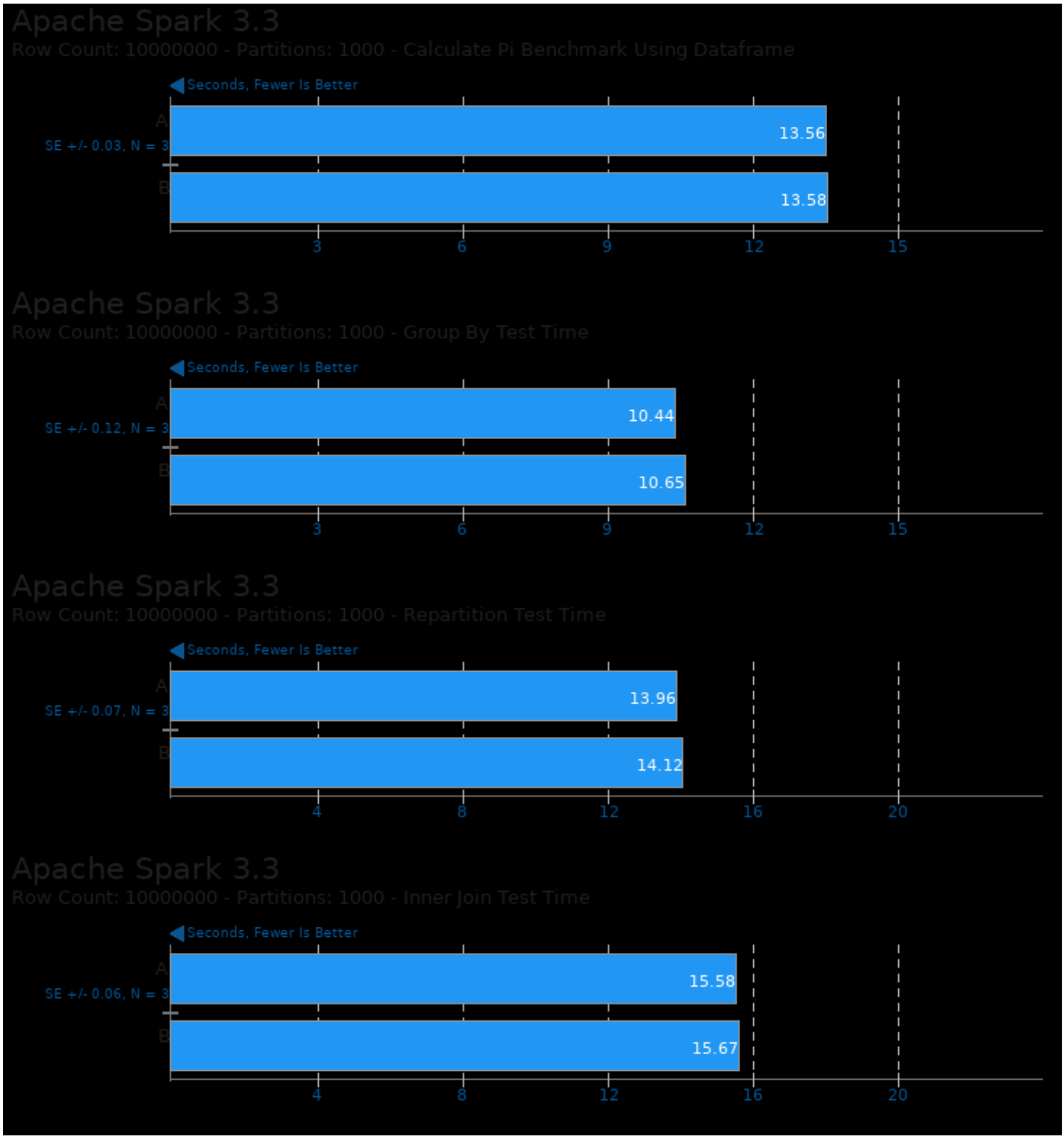
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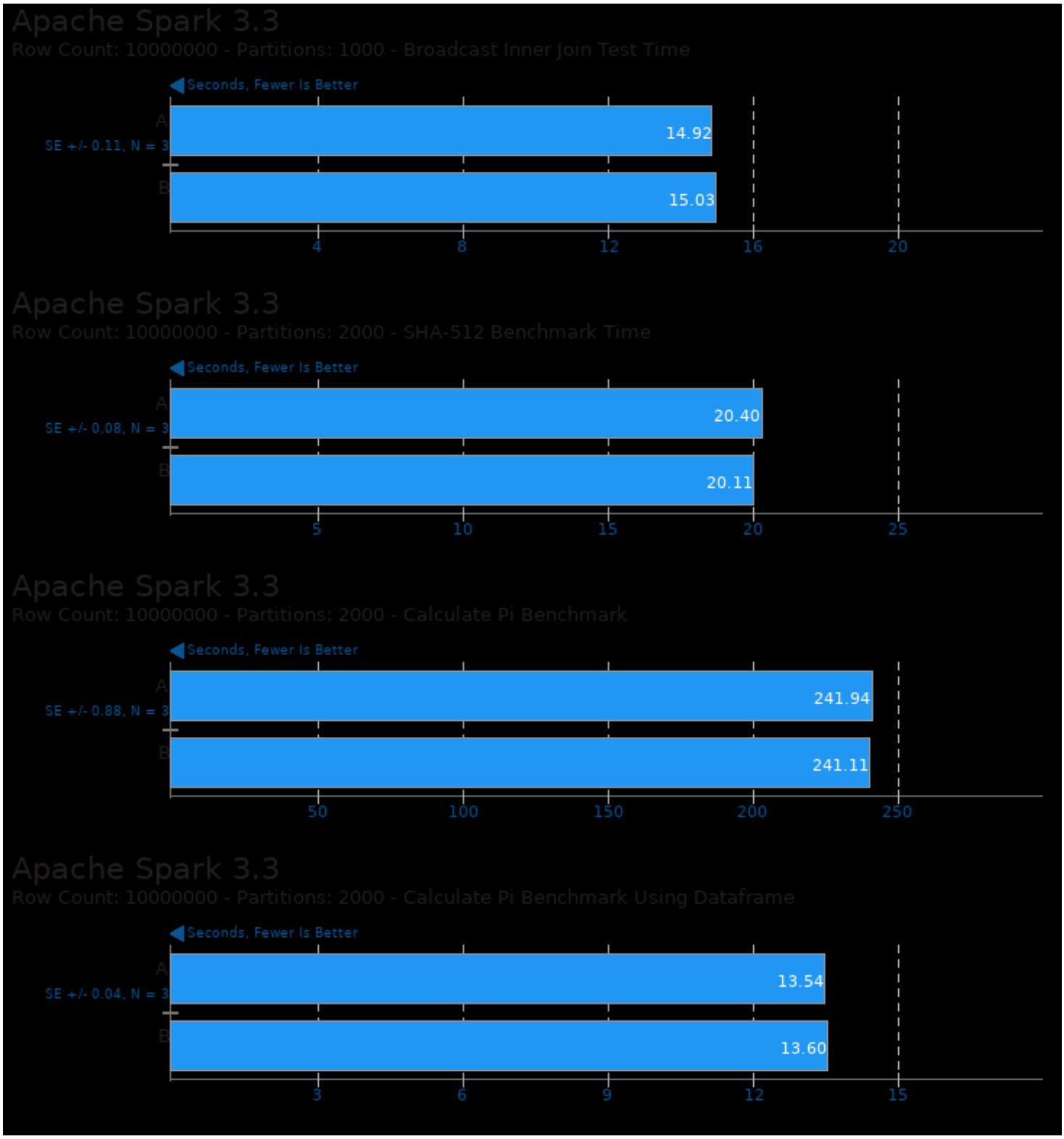
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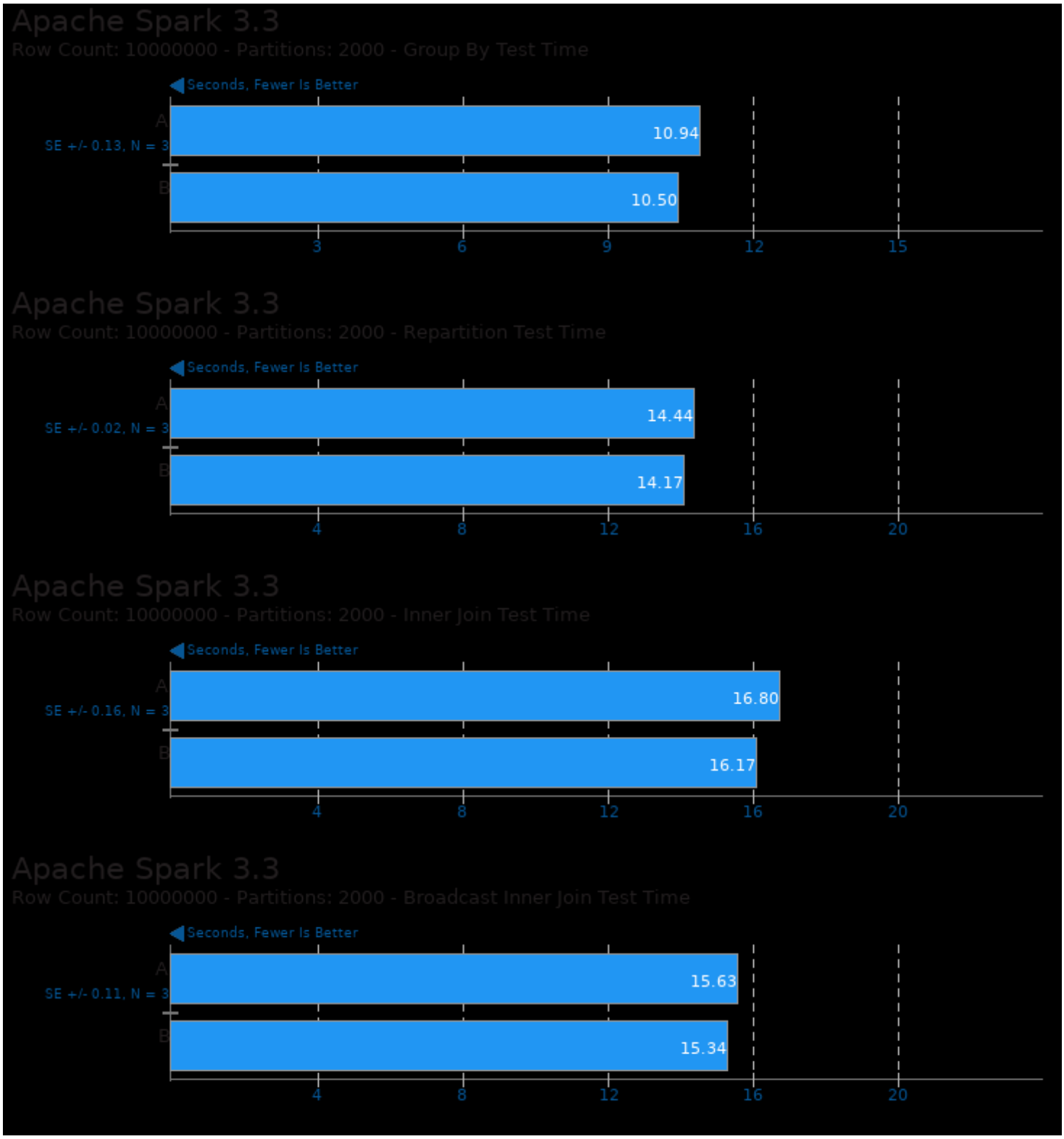
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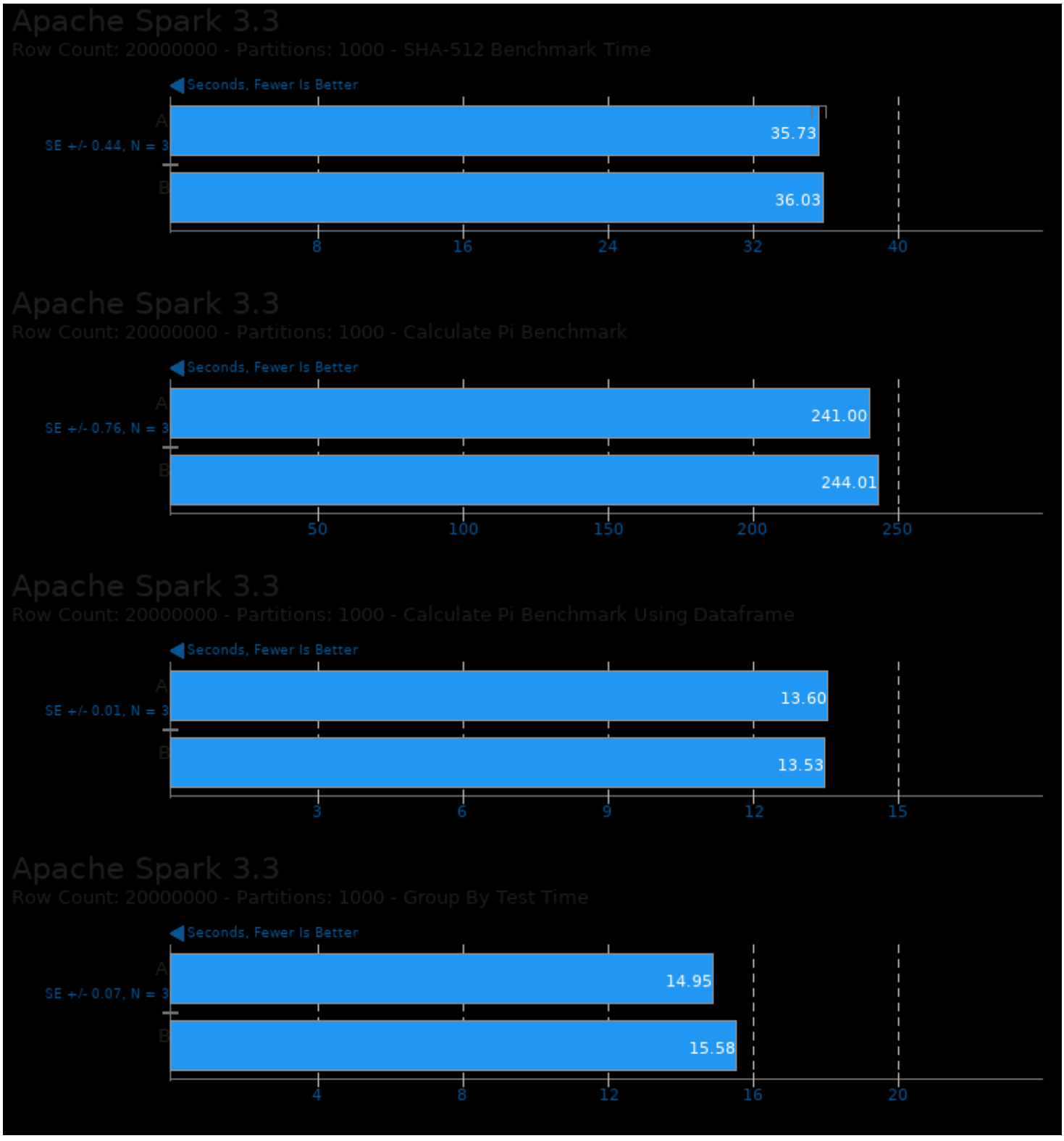
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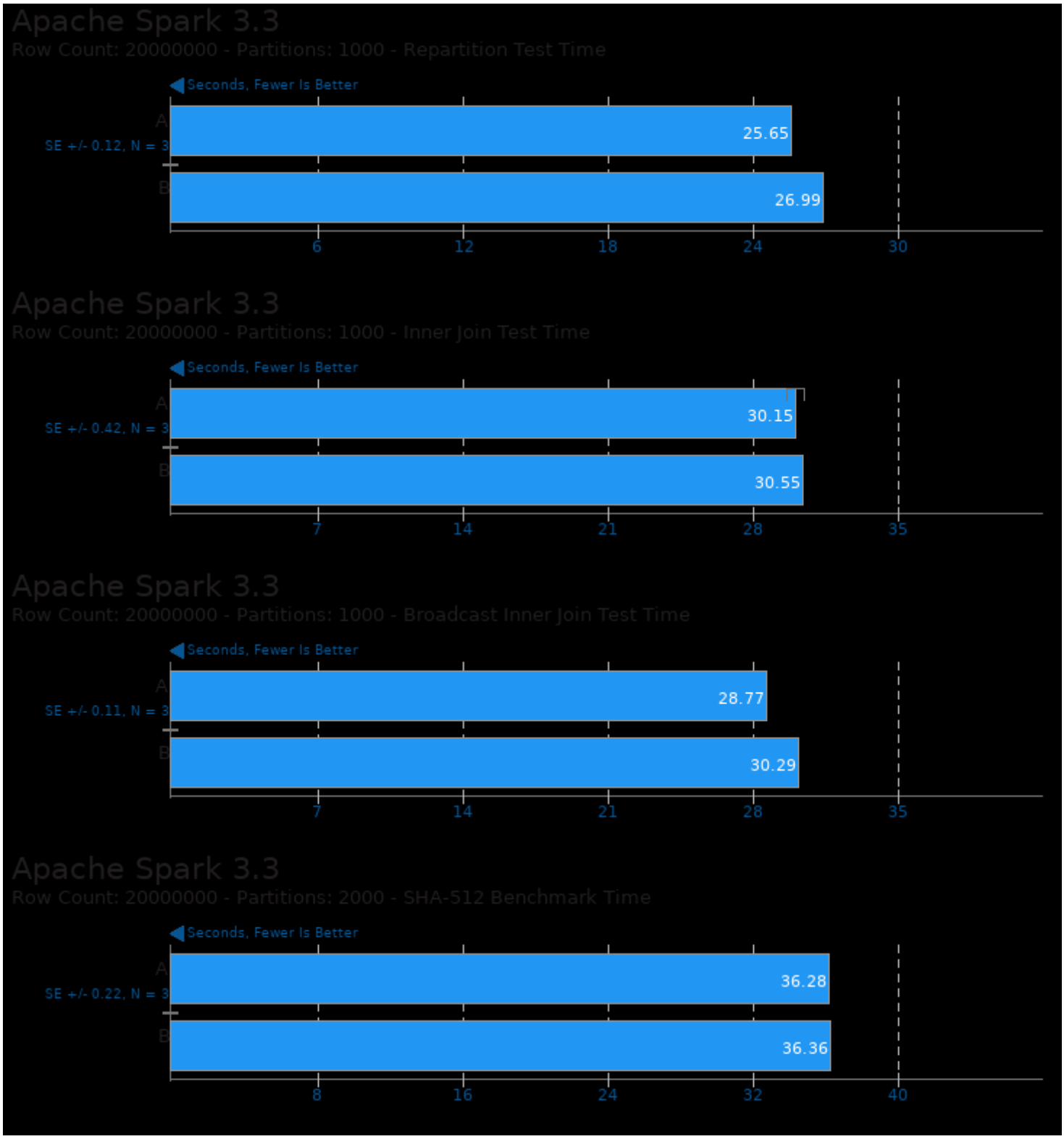
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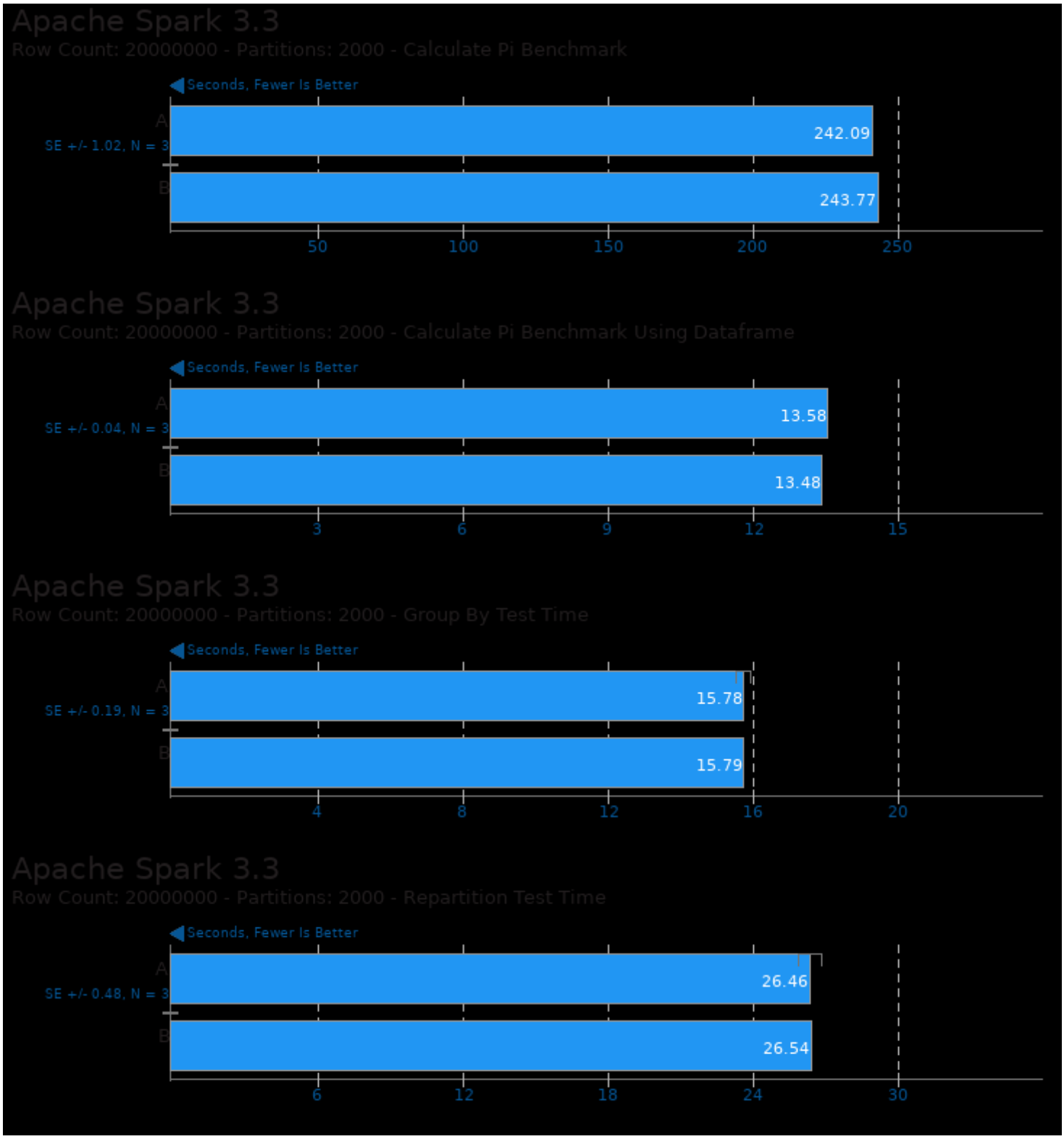
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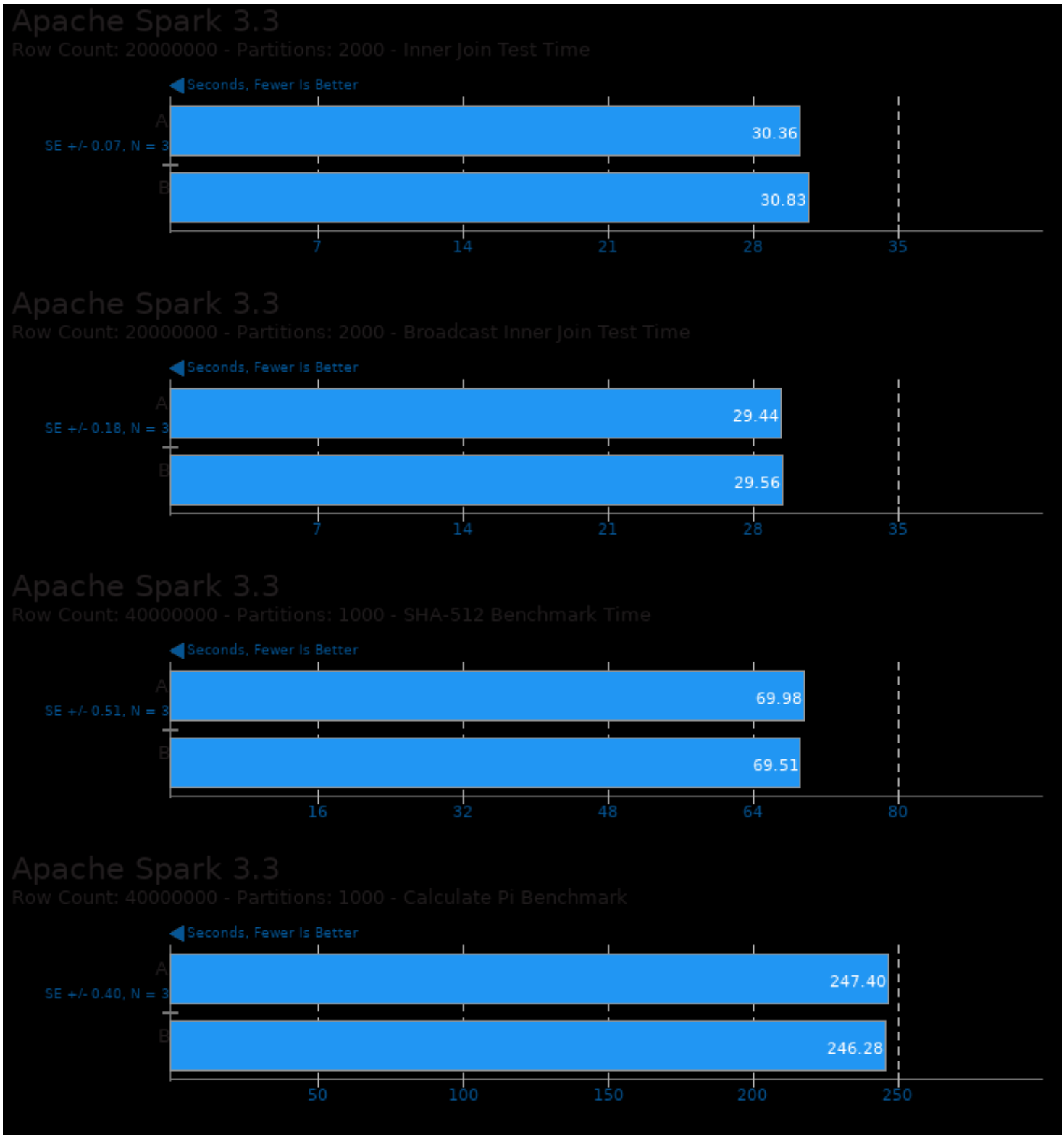
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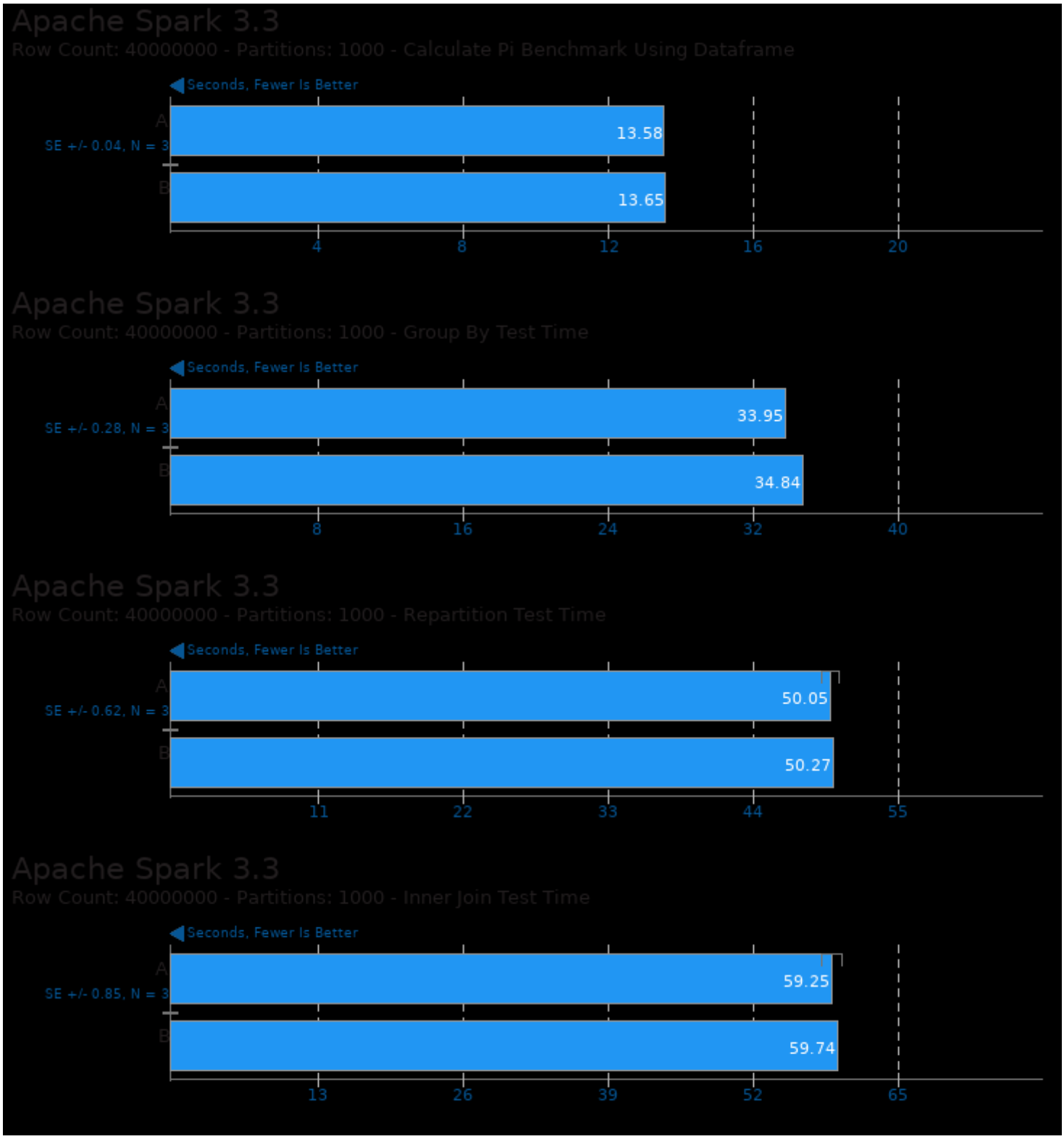
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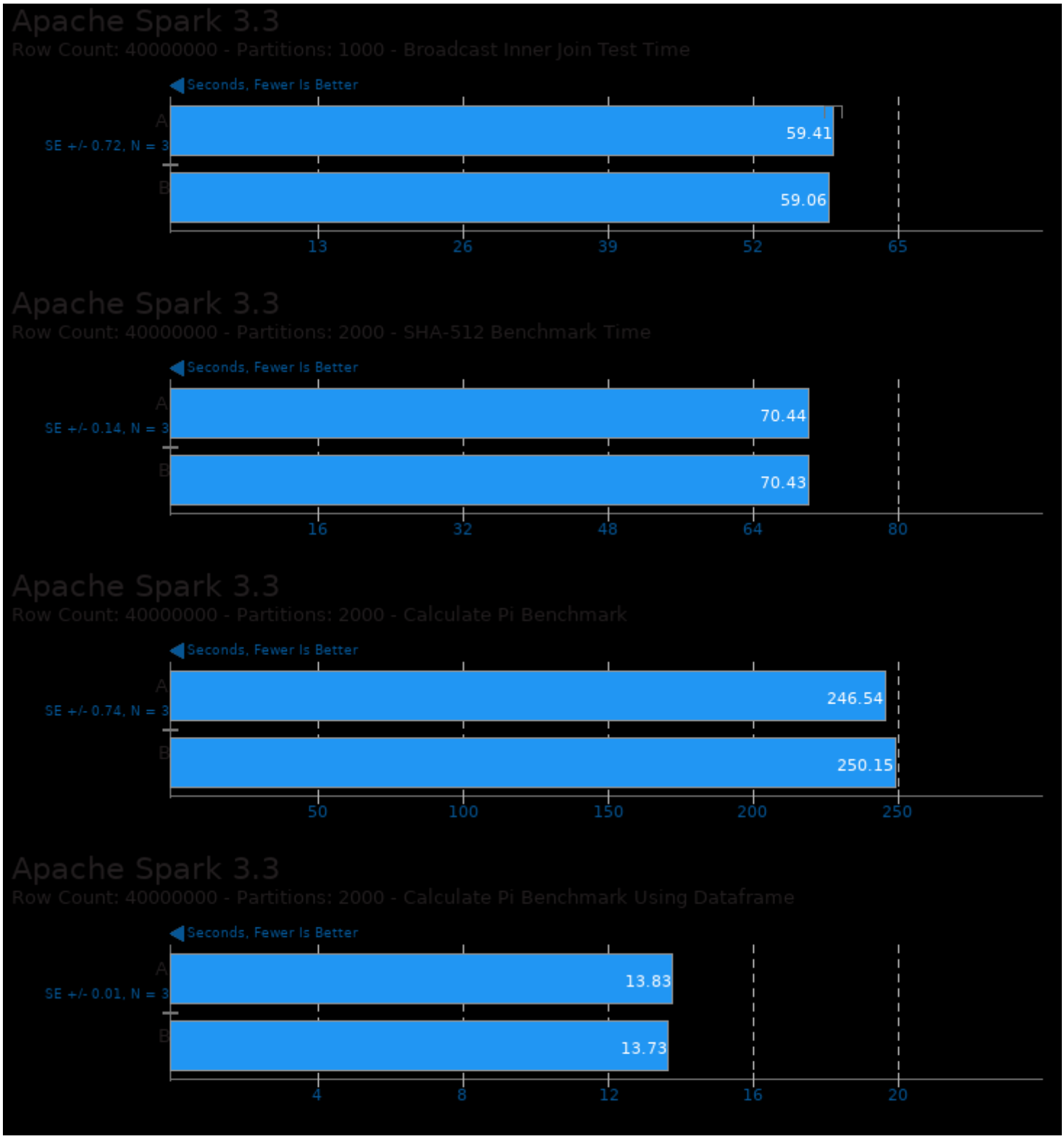
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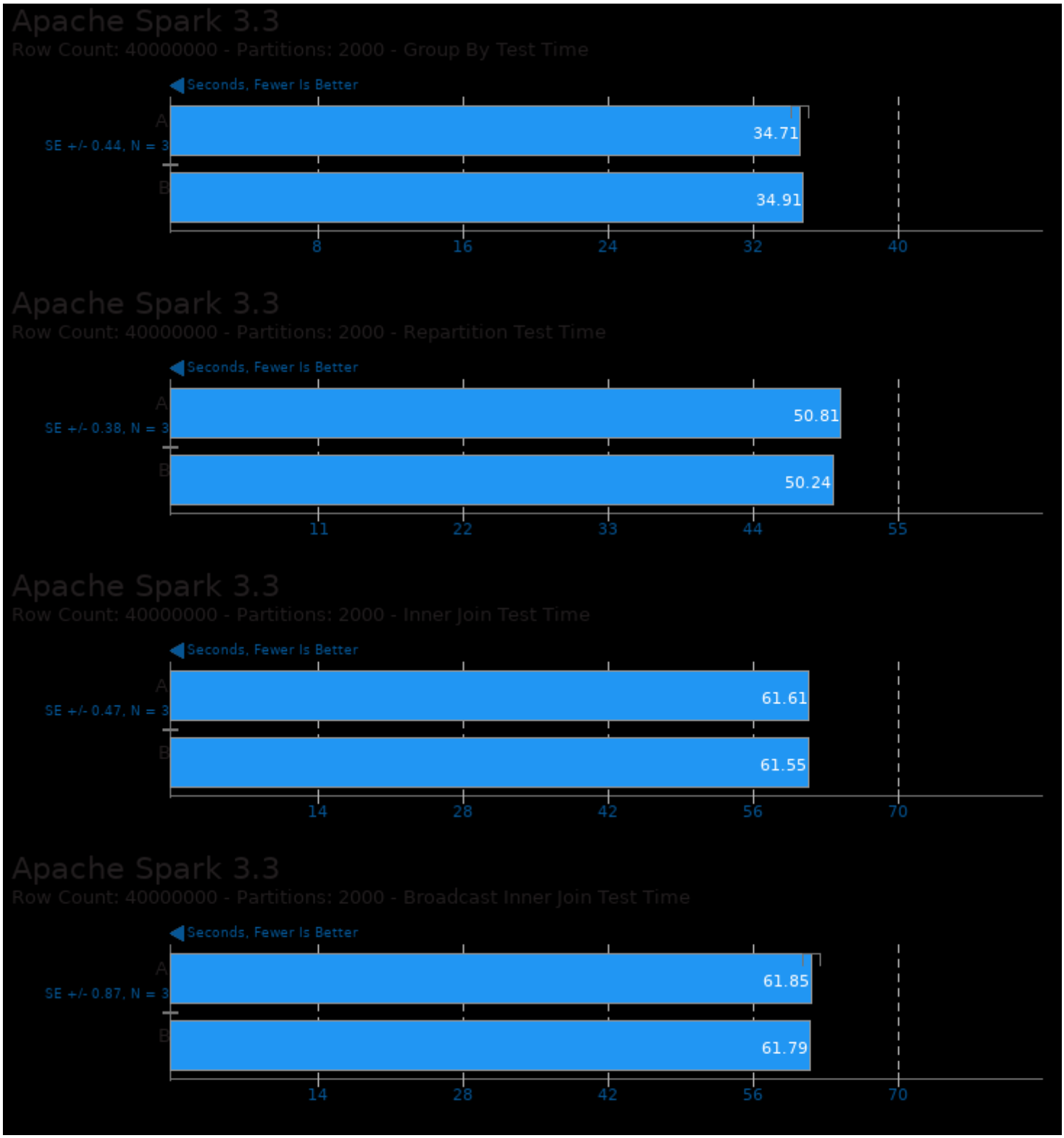
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